DEC. 16 1960

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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INSIDE Slant

A STORY WORTH REPEATING

"Don't eat the seed corn!"

That's the message that the Bariod Division National Lead Co. brought to the industry in an ad appearing in the Nov. 11 issue of PETROLEUM WEEK.

It's also a message that others should get over to those within and without the industry in stressing the need to retain or even increase the present rate of percentage depletion.

The theme of the ad is, "From each year's harvest, a portion must be set aside as seed corn to assure a crop next year. Never sold, never eaten, the seed is the only guarantee against a famine."

The ad clearly points out that the same is true with oil and gas; that depletion "provides the seed that finances the search and assures next year's crop of oil."

There must be depletion in the petroleum industry just as there must be profit in all business for it to exist.

Money to search for new oil reserves, as well as for new machines and better methods, must come out of seed money.

LeRoy Menzing
Editor

Charioteers learned 34 centuries ago that lubrication made things work easier, last longer.

Ancient Chinese invented a simple, rugged, efficient plug cock.

Blaise Pascal formulated principles of hydraulics in the 17th Century.

the idea:

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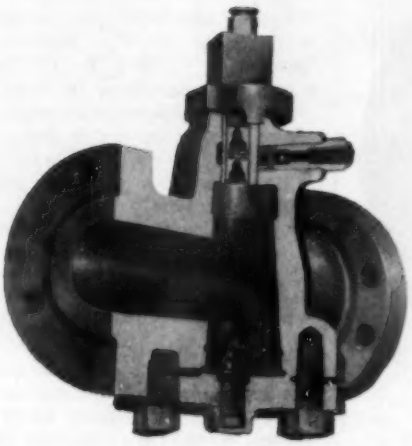
Sven Nordstrom ingeniously applied Pascal's principles of hydraulics and created the first lubricated plug valve in 1916 . . . the world's first valve that shut-off positively without the uncertainty of wedging metal into metal.

the application:



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the benefits:

Instant 1/4-Turn Operation . . . Positive Shut-off . . . Longer Life At Lower Cost . . . Easy Operation . . . No Exposed Seats . . . Instantly Replaceable Seal

The 6 million Rockwell-Nordstrom lubricated plug valves now used in a wide variety of industries are translating these benefits into dollars and cents savings day after day. Rockwell-Nordstrom is the most complete line of lubricated plug valves (sizes from ½" to 36"; pressures to 15,000 lb), lubricants and operating accessories. For *practical* help in solving your flow control problems, see your supplier or write: Rockwell Manufacturing Company, Dept. 96-M, Pittsburgh 8, Pa. Canadian Valve Licensee: Peacock Brothers Limited. If you live outside the U. S. or Canada, write: Rockwell International, S. A., Geneva, Switzerland.

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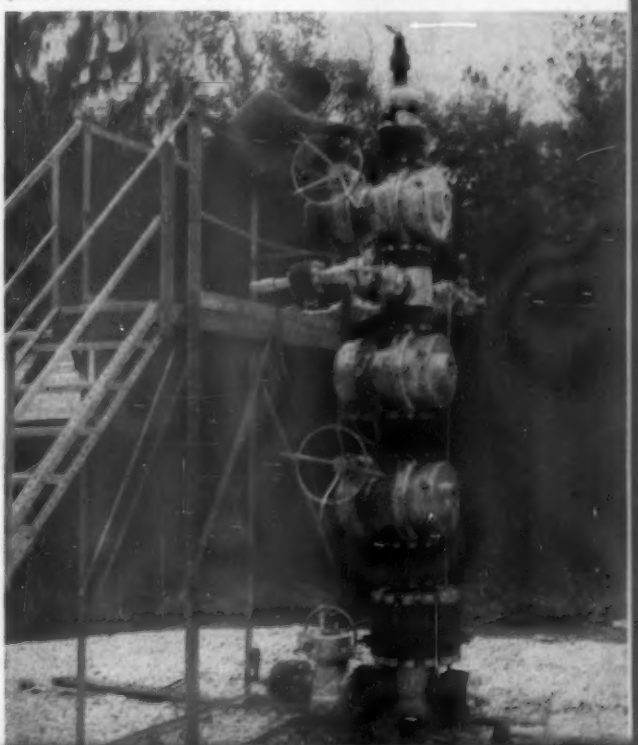

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When it comes to blowing our own horn . . . We believe it is done best by delivering pipe of quality, stamina and dependability. Lone Star, the oil country's own steel mill . . . does just that on a round-the-clock basis.
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Views That

Dear Sir:

I read with considerable interest the article "Motorists Can Be Urged to Drive More" [PW—Nov.25'60,p36]. I agree that there may be many psychological approaches to motivate people to drive more, but in doing so I believe that those who try to motivate more driving also have a very definite moral responsibility that goes hand-in-hand with increased driving. . . Many drivers are interested in getting to where they want to go or seeing what they want to see, and forget as much as they can about the other drivers on the road with them.

Few people realize that normal courtesy in driving will come back to the courteous driver many times over because courtesy is contagious! May I suggest that adequate consideration be given to promote increased courteous driving simultaneously with any campaign to promote more driving.

There have been many campaigns in many cities to promote courteous driving, some of them very worthwhile, but not too effective because they were isolated cases. I believe that if a good Courteous Driving Campaign was put on a national basis, and supported by most oil companies and law enforcement agencies, you would automatically get more driving and thereby more domestic use of petroleum products—after all, that's what it's all about.

R. E. WAGENHALS
Manager of market research
Timken Roller Bearing Co.

Dear Sir:

In your Key Prices department, NWI-USNH tanker rates seem to mean Netherland West Indies-New York. But what on earth do the letters USNH refer to, specifically?

W. A. FINDLAY
Denver, Colo.

• USNH refers to United States North of Hatteras, which includes ports up to New York but no farther.

"We feel confident that the offshore drilling industry learned its lesson several years ago, and that it will not overbuild. Today, all of the deep water rigs, such as those owned by Zapata, are working, thus causing a definite improvement in day-rates from the lows established in 1958. In relation to capital invested, there is still

Make News

room for much improvement, but prices have become more realistic during the last year."

—GEORGE H. W. BUSH
President
Zapata Off-Shore Co.

"The greatest single source of uncertainty, and, consequently, injustice to those who are regulated [is that] agencies do not make policy because policy is hard to make and because it is far easier to take up each case as it comes along and figure out what to do with it on a flexible ad hoc basis."

—LOUIS J. HECTOR
Former member
Civil Aeronautics Board

"If we are going to continue to move forward on our present course, it is essential that we in our business continue to deliver low-cost energy in greatly increasing quantities. . . . Critics of this industry, in growing numbers, are demanding that our operations and decisions be taken over in varying degrees by agencies of government. If these demands are successful, it is highly doubtful that our growing needs for energy can be met as they have been in the past. This is the problem.

From the wellhead to the marketplace, we are under fire. At one end of the operation, we are combatting attempts to alter the federal income tax structure so radically that funds for continued exploration for more oil and natural gas could be choked off. At the other extreme, we have for several years been resisting a drive to undermine competitive-enterprise marketing of our products and to substitute an inflexible, government-dictated price structure. In between, there has been a welter of other ill-advised proposals, none of which would benefit either the industry or its customers, and many of which would do irreparable harm to both."

—KERRYN KING
Vice-president
Texaco Inc.

PETROLEUM WEEK *will publish each week comments from readers on timely, pertinent subjects. Such expressions are welcome.*

Address all such correspondence to LeRoy Menzing, Editor, PETROLEUM WEEK, *330 W. 42nd St., New York 36, N.Y.*

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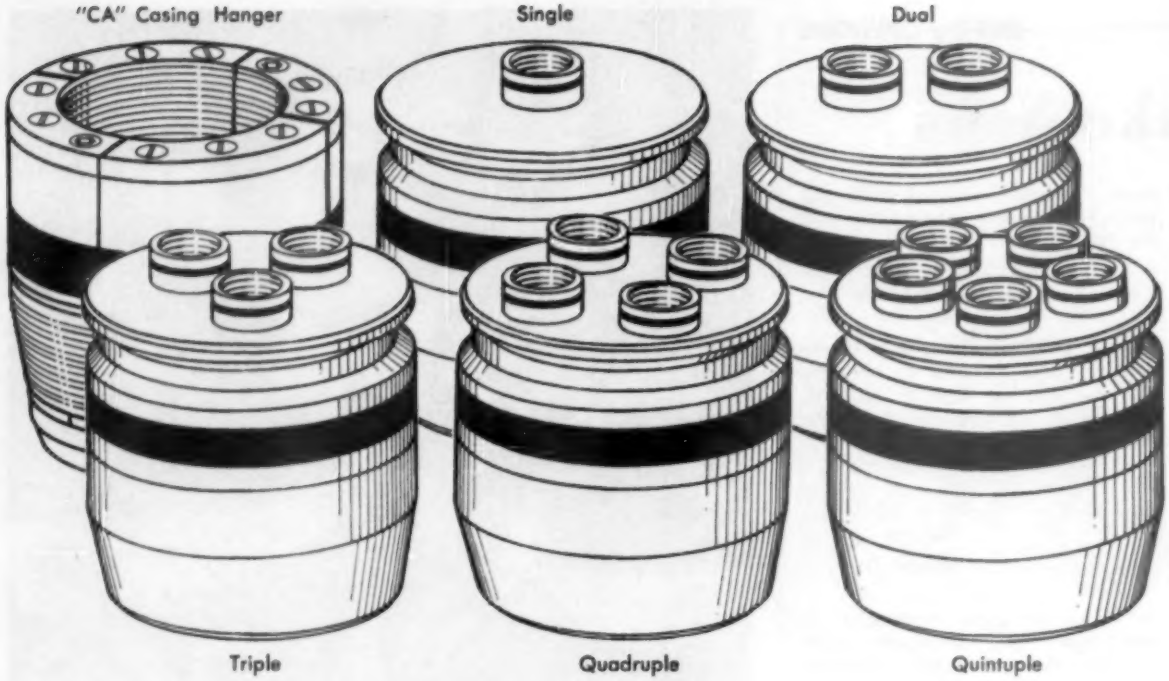

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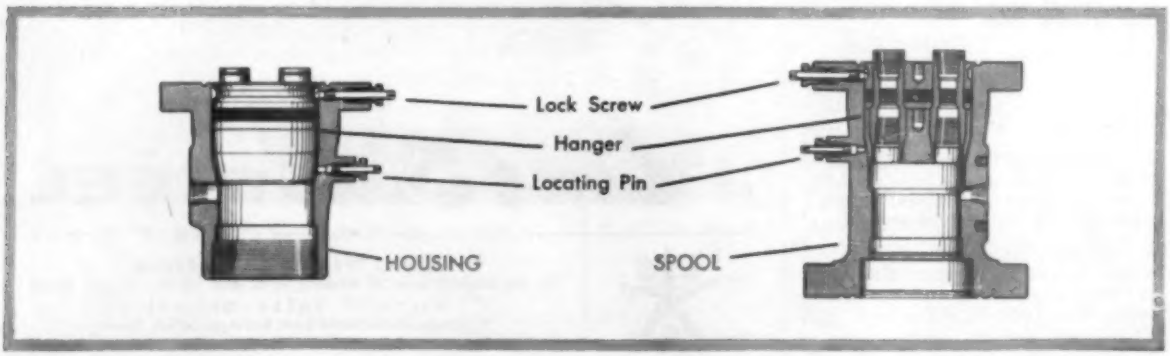

60-Second Summary / WHAT'S HAPPENING IN OIL

December 16, 1960

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It could be that the Kennedy Administration will do something about coordinating the petroleum policies of various government agencies. What the mechanism will be isn't clear yet, but, in all probability, all forms of energy will be affected. Coal interests feel the present thinking "is a step in our direction." . . . p. 13

•

Creole Petroleum Corp. will sell Mobil Oil Co. of Venezuela 112.5-million bbl. of crude over a 22½-year period. The agreement assures the Socony Mobil affiliate of a Western Hemisphere source of crude for its worldwide markets. . . . p. 14

•

The depression in the tanker market appears over for the moment, with rates back up to profitable operating levels. The improvement means that a lot of vessels are being brought out of lay-up, though not all are entering oil service. . . . p. 48

•

Waterflood costs can be held in line by using standardized water plants. Not only that, says Home-Stake Production Co., of Tulsa, but areas previously considered uneconomic can now be worked. . . . p. 24

•

Italy's high hopes for its first venture in the Persian Gulf aren't panning out well. The state-owned ENI is reported disappointed in its Iranian offshore tract. . . . p. 42

•

Indiana Standard has joined the move toward wide-area pricing for gasoline, in Kansas. It represents a vote of confidence in a plan to eliminate local dealer discounts, which apparently has government approval. . . . p. 14

•

Value analysis may point the way to substantial savings for refiners in the purchase of equipment and supplies. It's a relatively new procedure for relating function, quality, and costs. . . . p. 34

•

DX Sunray Oil Co. unveiled what it believes will be the service station of the future. Two years of planning and architectural work are incorporated in the new design. . . . p. 40

•

President-elect Kennedy, it now appears, will play a personal role in oil import policies. Kennedy will call more turns, and there may be more surprises. . . . p. 22

•

Seawater can be made potable with a butane conversion process. It's good news for seashore refineries, and holds the possibility of fresh water for as little as 30¢ per 1,000 gal. . . . p. 37

Up to the Minute / SIGNIFICANT LATE NEWS

December 16, 1960

Humble Oil & Refining Co. is consolidating its organization into four operating regions for exploration, production, and marketing. It will abolish the four divisions and their boards of management that were created when Humble became the chief domestic affiliate of Standard Oil Co. (N. J.) at the end of 1959. Humble will retain its various product brand names in the territories of the divisions being abolished.

General headquarters will continue in Houston, which will also be the headquarters of the Southwest region. New York will be the headquarters for the Esso Standard, Eastern region; Tulsa for the Central region; and New Orleans for the Southeast region. The regions will be further divided into areas, and the areas into districts. Three functional divisions will also be created— manufacturing, marine, and Enjay Chemical Co. Humble Pipe Line Co. will continue as a separate entity.

Each of the four regions will be headed by a vice-president, assisted by a general manager. William W. Bryan and Alex A. Diffey are the vice-president and general manager, respectively, for the Eastern region; Russell H. Venn and Carl G. Herrington are the top officials in the Southeast; Ray H. Horton and James H. Galloway in the Southwest; and John W. Brice and Robert O. Goodykoontz in the Central. J. Prince Warner has been named vice-president and general manager of the manufacturing division, and John D. Rogers is to be vice-president of the marine division. Morgan J. Davis, Humble president, says the new streamlined plan will become effective immediately in principle and will be implemented as rapidly as operations permit.

•

Crude purchasers told the Texas Railroad Commission this week that they are short of crude and all products, except gasoline. Their statements run counter to actions of Mobil Oil Co. and Humble Oil & Refining Co. in cutting their December runs. Mobil cut 17,000 b/d from November and Humble cut 24,000 b/d.

•

Some company wage offers are getting closer to the demands sought by the Oil, Chemical & Atomic Workers. This week local managers of Shell Oil Co. and Tidewater Oil Co. are offering 5% increases for one year. Earlier, several companies had offered a 5% pay hike for a two-year period, which was unacceptable to OCAW. The union is seeking a flat 18¢ an hour hike, and the 5% would average out to close to 15¢ an hour. At Marcus Hook, Pa., the Independent Refinery Workers Union has accepted a 5% one-year offer of Sun Oil Co.

•

Crude Oil Pipe Line, Inc., is seeking to halt construction of Continental Oil Co.'s Glacier crude line in Montana. The company filed suit in U. S. District Court in Denver charging Continental with attempts to "monopolize" crude marketing in the Rockies, charges that Continental has denied.

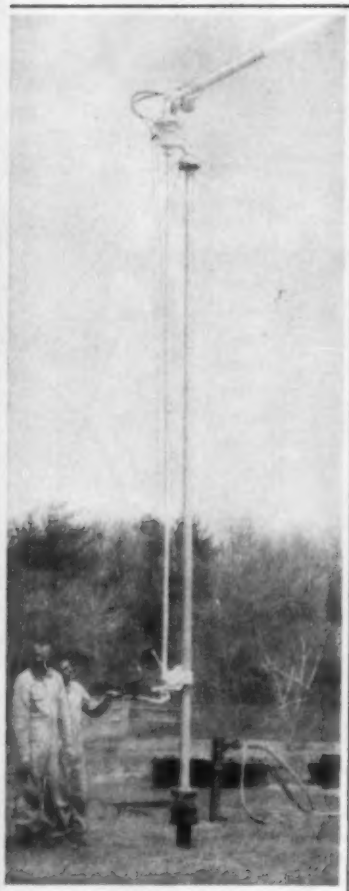
•

Sun Oil Co. was acquitted of gasoline "price fixing" charges in U. S. District Court at South Bend, Ind., this week. But motions for acquittal of 12 other defendants were denied, and the case is continuing.

Most Complete Line of Specialty Turrets on the Market!

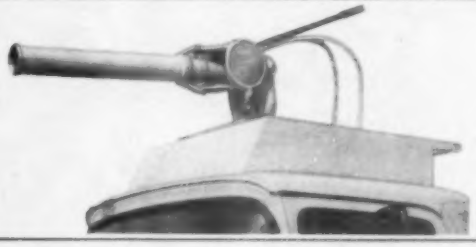
...All Rockwood Turrets Discharge FogFOAM

Solid FOAM Stream — WaterFOG — Solid Water Stream

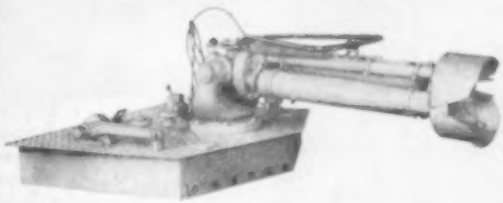


Extended Manual Control Type — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units . . . greater remote extensions for special applications.

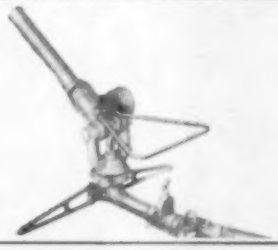
Direct Manual Control Type — Gives fire fighters "out-in-the-open" control from cab roof!



Remote Manual Control Type — Easily handled by man in driver's seat. Ideal for fast action!



Remote Hydraulic Control Type — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Portable Type — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

ROCKWOOD Turrets provide plenty of volume *and* versatility. What's more, all are easily adjustable on the fire line to meet changing fire conditions. Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, they're designed to give fire fighters an extra edge of efficiency on most types of fires. Get full details on the complete line of fire-fighting products. Write ROCKWOOD SPRINKLER COMPANY, Portable Fire Protection Division, 486 Harlow Street, Worcester 5, Massachusetts.

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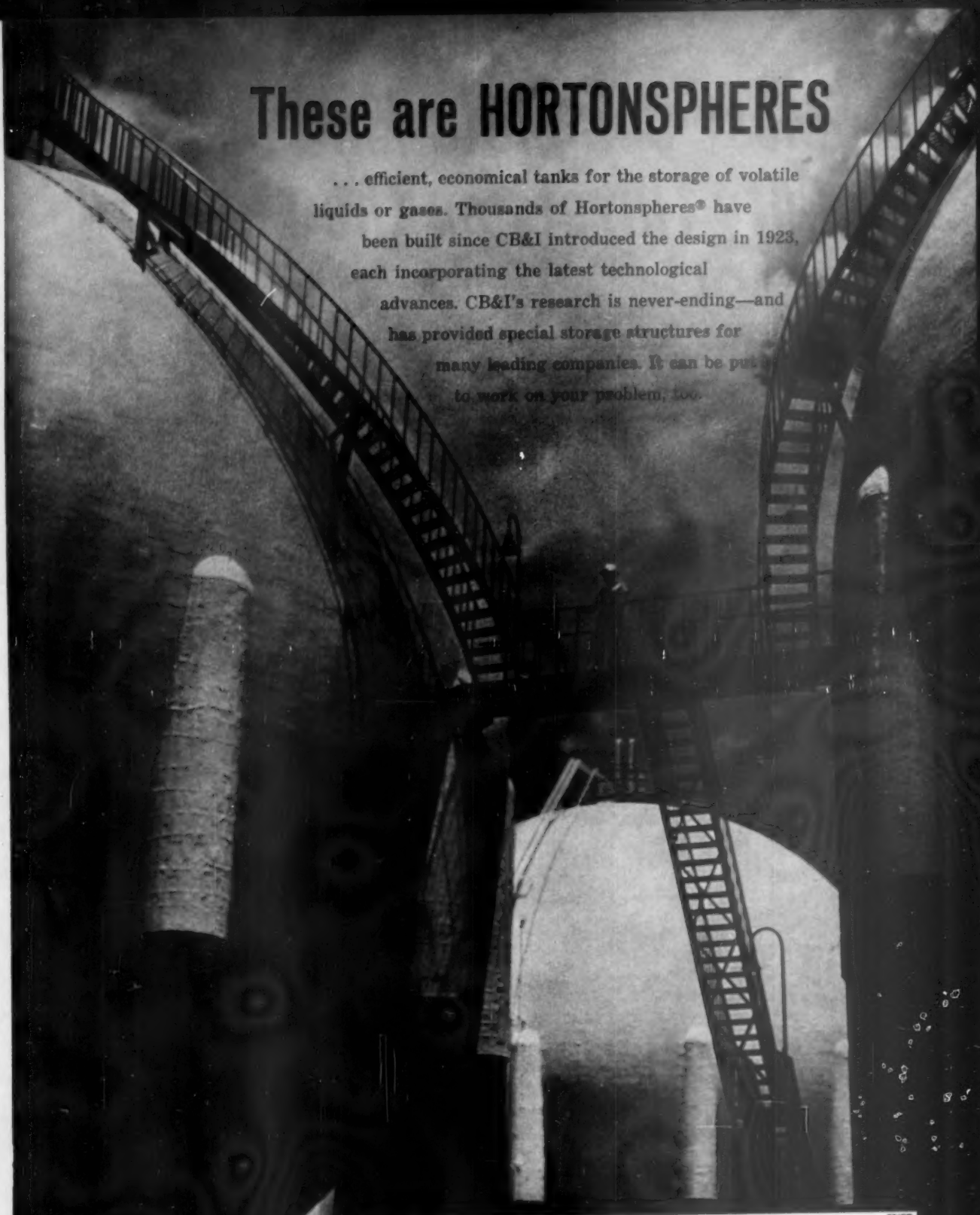
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Kennedy Administration May Coordinate Agencies

The Kennedy Administration will try to set up some mechanism to coordinate petroleum policies and practices of various government agencies.

That such an attempt will be made by the incoming Democrats became clear this week.

What the mechanism will be and how it would operate is still uncertain.

But all fuels—probably all forms of energy—will be affected.

Such central coordination is one of the basic requirements of a study being worked up by James M. Landis, President-elect Kennedy's top regulatory advisor.

Kennedy was scheduled to get Landis' first official thought on Washington's regulatory entanglement late this week.

An interim report was being submitted, to be followed by a more complete analysis early next year.

The crux of Landis' proposition is that a fuels action taken by one government agency should track with those taken by other offices.

"Some mechanism to coordinate these things is essential," Landis says. "Matters like coal, oil, and gas and, of course, atomic energy, are now handled separately—in a sense, in isolated compartments."

Landis is inclined toward a central agency or fuels policy—rather than the establishment of a new, massive agency.

He recently told a senate subcommittee:

"The agencies could be left where they are, and the coordination could be on a policy line more than anything else."

But the establishment of any sort of policy or coordination system probably would require an administrative office or staff.

One idea being considered is a separate policy-planning board in the President's executive offices.

Such a board, if decided upon, probably would be an integral part of the White House offices with direct responsibility to Kennedy.

Advisors to Kennedy say the idea hasn't been sufficiently developed to forecast whether such a board would have industry representation.

Another thought is for a similar board under the National Security Council.

The council proper includes the President, as chairman; Vice-President, Secretaries of State and Defense, and the Director of the Office of Civil and Defense Mobilization.

Some government experts, however, doubt the wisdom of placing energy or fuels policy under the NSC, which —in the past, at least—has concerned itself largely with cold war matters.

But there have been some instances in which the National Security Council has been interested, as a group, in essentially economic matters. The oil imports question has been a subject of NSC debate.

James M. Landis

Landis is also considering whether any of the present regulatory functions of agencies should be shifted.

Oil and gas matters are handled by a complexity of federal offices. The Interior Dept. administers the oil import program, with OCDM the price watchdog on residual fuel oil.

The Federal Power Commission regulates interstate sales and deliveries of natural gas, the Interstate Commerce Commission sets transportation policy on oil pipelines, freight and truck movements, the Maritime Administration plays a large role in shipping.

The Depts. of Defense, Commerce, State, and Treasury, also get into petroleum policies.

Landis believes there is little or no coordination among these various governmental arms. Some of the functions, he thinks, might be moved about for better efficiency and simpler administration of whatever federal fuels policy is adopted.

Some of the ideas Landis is considering are similar to those advanced by William A. Connole, former Federal Power Commissioner.

Connole, now a lawyer in Washington, has been contacted by Landis, who has talked to a number of commissioners and former regulators.

Connole has long advocated the es-

Significant Sidelights

■ **The seasonal strength in middle distillate prices has improved refiners' margins considerably in recent months, and observers now are predicting that margins in 1961 may be the best of the postwar years. One estimate is that margins of Gulf Coast refiners next year will average close to $1 a bbl.**

Current refiners' margins on the Gulf are placed at 95¢ a bbl., up nearly 20¢ since the low for the year was reached in the second quarter, and the highest in more than three years. For all of 1960, it is expected that margins on the Gulf will average 85¢ a bbl.

tablishment of a national fuels policy.

The former FPC member says any suggestion of industry domination or of "single-fuel preferences" should be completely avoided in establishing any national policy.

Connole thinks the first step toward creation of a policy should perhaps be a study by an "authoritative, dispassionate group" preferably oriented around Congress.

He has supported the resolutions pending in Congress to create a joint study committee.

Coal interests see the Landis study and recommendations as a favorable movement "in our direction."

One of the National Coal Policy Conference's proclaimed objectives is a broad fuels policy study. Once such a study is started, coal men will make their views known on what the policy should be and undoubtedly will get into a pitched intrafuels battle. But their first goal is some machinery for a policy study.

Some oil men are reluctant to go along with a study for fear it might be influenced by the coal industry.

"We think things are going in our direction," one coal leader says of the Landis movement for fuels policy coordination.

A spokesman for the Coal Policy Conference said the group has not been in touch with Landis, however.

Mobil, Creole Sign Crude Contract

A Socony Mobil Oil Co. affiliate will buy an average of 13,700 b/d of Venezuelan crude from a Standard Oil Co. (N.J.) affiliate for the next 22½ years, under a long-term sales agreement announced this week in Caracas.

The deal was actually arranged between Mobil Oil Co. of Venezuela and Creole Petroleum Corp., Jersey's Venezuelan affiliate. It provides that Creole will sell to Mobil a total of 112.5-million bbl. of Tia Juana medium crude during the 22½ years.

In addition, Mobil will have the right to buy up to 100-million bbl. of Tia Juana light crude from Creole over the same period.

Tia Juana medium crude runs around 26-gravity; the light crude averages 31-gravity.

Industry sources speculate that the deal may be an outgrowth of the recent split-up of Standard-Vacuum Oil Co. between Jersey and Mobil.

As a single operating unit, they point out, Stanvac had access to Jersey's big Western Hemisphere crude supplies as protection against any possible disruption of the company's normal Middle East sources. But after the split-up is effective, Mobil will have no such crude-supply security for its new Eastern Hemisphere refining and marketing subsidiary.

The Venezuela deal, these sources speculate, is designed to give Mobil that security.

In any case, the sales pact greatly strengthens Mobil at what has always been one of its weakest basic points: a lack of Western Hemisphere protection of its supply sources in case of an international crisis.

Its value to the company in Venezuela, specifically, is apparent: Last April it put a 50,000 b/d refinery on stream at El Palito, Venezuela, on the Caribbean, which gets its crude via pipeline from Mobil's Barinas concessions. But the latter have proved disappointing; proved reserves to date give no assurance of being able to supply the refinery for any considerable length of time in the future.

Jersey, on the other hand, is long on Western Hemisphere supplies: It is the largest producer not only of Venezuelan crude, but of U.S. and Canadian crude as well.

The two companies also announced this week a farmout agreement covering some of Creole's undeveloped acreage in Lake Maracaibo.

Mobil will develop the acreage for the joint account of itself and Creole; it will get 75% of any oil that is produced while Creole will get the other 25%.

Wide-Area Pricing Gets Boost

Wide-area pricing has received another vote of confidence. Standard Oil Co. (Ind.) last week revealed that it is following the wide-area approach in setting its tank wagon prices in Kansas.

This is the first avowal that Standard has made in connection with wide-area pricing. It is known, however, that the company is experimenting with the pricing technique in parts of Michigan and Wisconsin.

Standard's move is important because it imparts prestige to a pricing plan that is at once satisfactory to dealers, suppliers, and, apparently, to government officials.

This system, as introduced by Mobil Oil Co. in New England in October, 1959, involves two main fundamentals:

- The broadening of normal pricing zones to include wide areas, in which a single tankwagon price will prevail.
- The elimination of local price discounts to all dealers in each area.

Judging from Mobil's experience, the wide-area approach has generated considerable dealer praise. The National Congress of Petroleum Retailers (NCPR) has applauded the plan, recognizing the equality of pricing that is extended to all dealers in each area.

Government officials have privately lent their approval to the antidiscriminatory aspects of the plan.

In Indiana Standard's hands, wide-area pricing in Kansas consists of nine price zones, each covering all or parts of 15 counties or more.

Standard's purpose for invoking the zones is apparently to lessen the sharp price differences that occur when price wars flare up.

Now, as one moves from one zone to another, he will recognize only minor changes in tankwagon prices, says H. E. Purdy, southwest regional manager for the company.

This condition, says Purdy, will minimize gallonage drainage from one area to another, which often happens during price wars.

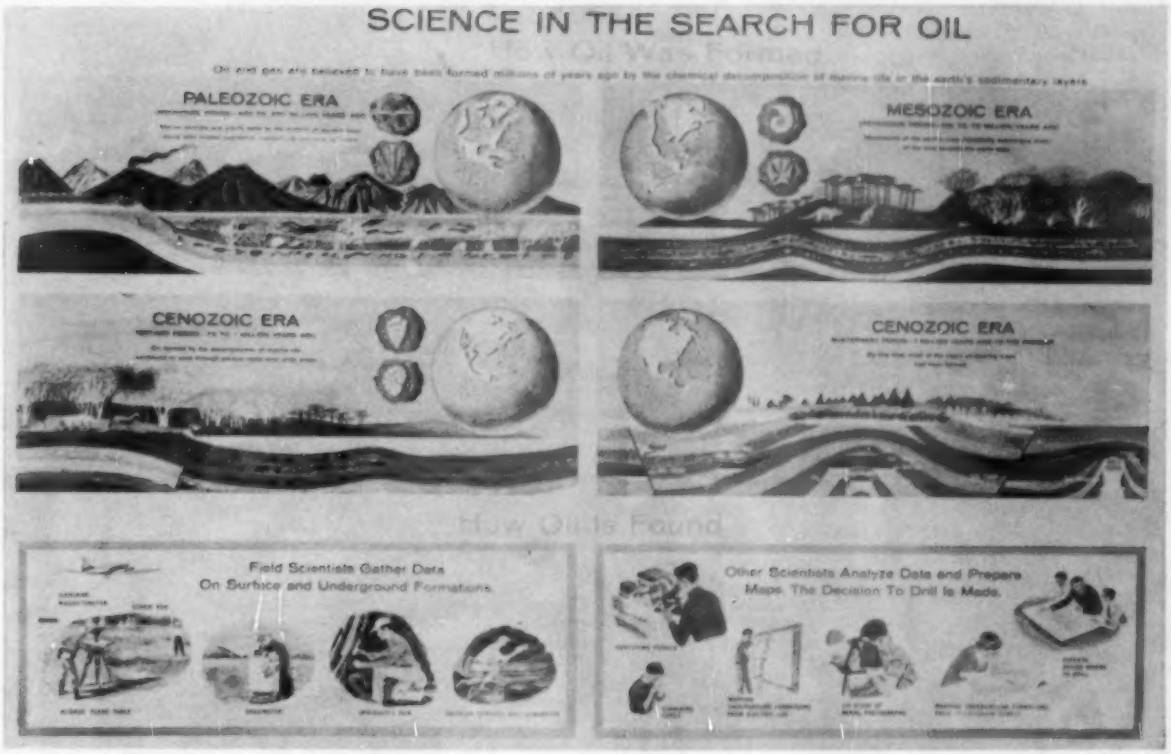
To introduce its nine zones, Standard dropped its tankwagon prices by amounts ranging from 0.2¢ to 1.5¢ a gal.

In Wichita, where Standard had retained a 17.3¢ posting since August, the company reduced its tankwagon price to 17.1¢ per gal.

At the other extreme, in Atwood, Standard dropped its price from 19.4¢ per gal. to 18.1¢.

These price reductions, drawn over the broad scale required by wide-area pricing, represent an alternative to the local price discounts that Standard had normally extended to dealers and jobbers during price disturbances in Kansas.

Such disturbances have recently become widespread in the state, the company says.


SCIENCE IN THE SEARCH FOR OIL
PALEOZOIC ERA
MESOZOIC ERA
CENOZOIC ERA
CENOZOIC ERA
How Oil Is Found
Field Scientists Gather Data On Surface and Underground Formations.
Other Scientists Analyze Data and Prepare Maps. The Decision To Drill Is Made.

SCIENCE IN THE OILFIELDS is the theme of one of a series of modern teaching aids that are being provided to schools.

API School Aids Bridge Textbook Gap

High school instruction is getting a shot in the arm to keep it abreast of the 20-league strides being taken by all industries, including oil.

Contemporary scientific and economic events are moving far too fast for the textbooks and teaching materials being used in most schools.

In some cases, educators have found that texts lag as far behind as the immediate postwar days.

To bridge the gap, U.S. industry is pouring more money into educational programs each year than public secondary schools spend on texts.

Education's "booster shot" comes from industry-sponsored teaching aids. Outstanding examples are those of the American Petroleum Institute's School Program, which is now being "teacher-oriented."

The value of the program, says a former educator and one of the deans of API's Education Advisory Committee, "lies in the fact that it augments materials that teachers already have, and that it updates textbooks with current topics."

The program is not unique—industry educators have been preparing supplemental materials for teachers and students alike for years. The Manufacturing Chemists Assn., the Assn. of American Railroads, U.S. Steel Corp., and General Electric Corp. are good examples.

Within the oil industry, several of the larger companies have extensive school programs, notably Standard Oil Co. of California, Humble Oil & Refining Co., and Sun Oil Co.

API's program represents one of the industry's earliest efforts to turn out materials with an eye to what the educator needs and wants.

Although the program is a decade old, it got a new look in 1958 when a group of educators and oil men met at Princeton, N.J., to review API's original school series.

The seminar resulted in the "Princeton Blueprint," which, among other things, recommended that the program be geared to the teacher, rather than the student, and that materials be designed to fit into existing courses.

Most of the new teaching aids—either recently completed or now in preparation—are for secondary-school use. But the program will eventually include all grade levels, from kindergarten through college.

The program is at the half-way mark now.

API's goal: materials created by teachers for teachers.

First of the new student booklets in the institute's revamped series is a text booklet on physics, based on studies by Dr. Jerrold Zacharias, of the Physical Science Study Committee at the Massachusetts Institute of Technology.

"The booklet ties in directly with the newest concept of physics teaching," says an institute spokesman. "That is, to let the student learn physics principles by actually making and operating some of the apparatus that demonstrate those principles."

In the booklet, these principles are directly applicable to the oil industry—the seismograph, the magnetometer, and even a geiger counter. The students are given simple directions for assembling and using the instruments.

By providing professional teaching aids with no obvious ax to grind, oil educators hope to spark students' interest in learning.

The criteria for all materials, says API, is to make them acceptable to the teacher, "therefore, they must be factual and unbiased."

Some of the projects on the board for the institute's admittedly ambi-

tions program are teacher-created booklets on general science, social studies, mathematics, and chemistry, and a series of filmstrips on the economics of petroleum.

But it's not without self-motives that the oil business is taking an active interest in schoolroom problems —there's widespread misrepresentation of the industry in today's texts.

Significantly, nearly 30% of the entire population of the U.S. will be going to school in 1961. More than 17-million students will be attending junior and senior high schools alone.

"Here's food for thought for those companies considering where their public relations dollars can do the most good," says an educator-oil man.

"Many youngsters in their most impressionable years will be reading statements like these in their textbooks, and taking them for gospel: 'The industry is guilty of wasteful production practices' . . . 'The Standard Oil Trust has simply given way to a horse of another color' . . . 'Political corruption is rife in the industry.' "

Another oil man and former educator puts it this way: "Most of what is reported about the oil industry in school textbooks ends with Teapot Dome. We have an obligation to tell our story—to the kids as well as to the industry."

What sets API's program aside from other industry efforts is the fact that it is implemented by volunteer oil men.

Although not all members of API's 14-man Advisory Committee on Education agree that the volunteer approach is the best way to approach teachers, most admit that it has advantages.

"It gets oil men interested in local school affairs," says one committeeman. "The local oil man becomes a sort of information center and a source for the teacher to go to for materials, films, and field trips. It establishes him as a real community citizen."

The materials have gone over big with the nation's teachers. Some 24,000 of the 38,900 secondary schools in the U.S. are using API aids.

This is a good showing in view of the fact that there is stiff competition among industries to get to the teacher first with the most.

"The education system is busier than any industry," says a former educator on API's advisory committee.

"Every pressure group is trying to give the teacher something for nothing—from tubes of toothpaste to gold stars.

TRANSPORTATION SINCE 1775
1859
DRAKE'S OIL WELL unlocked a vast storehouse of efficient, low-cost fuels which gradually replaced other energy sources for railroads and ships and led to the development of the automobile and the airplane
TRANSPORTATION OF PETROLEUM

TRANSPORTATION since 1775 on land, on sea, and in the air shows old and new ways of moving oil. Like the other aids, it is designed with the teacher in mind.

"In the New York school system, for instance, you could use a special assistant full time just to buck the pressure groups."

To make sure its program stays on the beam, API has arranged with Purdue University to conduct a nationwide survey this winter.

A pilot study just completed shows that teachers look at the API program as a serious effort to help in the field of education and to be of real service to the schools.

This is being expanded into a full-scale survey. One of the practical results, says API, will be an accumulation of knowledge of the differences among school systems, what kinds of aids the teachers need, and how they want to be approached.

Findings from the national survey should be valuable not only in planning the materials themselves, but also in their introduction.

DISTILLATION is explained in simple terms for senior high school students.

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OPEC Won't Be a 'Cartel,' Iranians Say

TEHERAN—The new organization of five oil exporting countries (OPEC) will not function as a producing nations' "cartel," nor will it serve as a vehicle for attempted control of world oil production and pricing.

Instead, it is envisaged here as an "association" of producing nations for exchange of information and ideas, and unification of oil policies.

This, of course, is far less than predicted by some of its founding members—notably Venezuela's Oil Minister Dr. Juan Perez Alfonzo, and Saudi Arabia's oil director, Abdullah Tariki. Both still maintain that their "world oil proration plan" to control prices will be adopted at the next OPEC meeting (slated to be held in Caracas next January).

But this won't be the case.

For this runs counter to the views of at least one important member: the key oil producing state of Iran —whose oil reserves and producing potentials are among the largest in the Middle East.

* * * *

One thing, however, should be made clear from the start: Iran's opposition in this matter is not that of the boy who won't play ball with the rest of the gang. It would be quite willing to play ball if it felt there was any point to the exercise.

Rather, Iran's attitude is that of the man who sees no reason for jumping into a project that he is convinced will be not only unworkable but detrimental to everyone concerned.

* * * *

If there was any doubt left, it was dispelled last week by the Shah of Iran's statement to Petroleum Week (PW—Dec.9'60,p14).

On the one hand, the Shah acknowledged the usefulness of OPEC, remarking that it could "contribute toward the unification of petroleum policies of member countries and toward safeguarding the interests of consuming and producing countries, as well as the petroleum industry as a whole."

But he discarded current proration proposals—or other attempts to restrict production to hold up prices —as "nice in theory but unrealistic in practice."

The Shah's statement marked the first official Iranian Government clarification of its stand on prorationing. But it tallied closely with views expressed privately more than two months ago to oil companies in New York and London by Iran's well-known elder statesman, and former foreign minister, Abdollah Entezam, now chairman of the government's National Iranian Oil Co. (NIOC).

And, after nearly four weeks of informal discussions here by this reporter with numerous Iranians, it can be safely stated that a high degree of unanimity exists on this point among most Iranians experienced, or familiar, with world-wide aspects of petroleum operations.

* * * *

Discussions with NIOC and other officials here also make these additional points clear:

(1) The Iranians generally feel that nothing useful would be gained—to put it mildly—by inviting the Soviet Union into OPEC (as has been proposed in press conferences by at least one other OPEC member).

(2) The Iranians consider their role in OPEC largely that of a "catalyst": to introduce more "realism" into the OPEC discussions, and to tone down some of the more extremist proposals that they consider detrimental to the stability of the area.

(3) Similarly, the Iranians, who are not Arabs—and who, in fact, have rather strained relations with Cairo —regard OPEC as an important counter-measure to attempts by Cairo, through its domination of the Arab League, to establish the latter's control over Middle East oil policies.

(4) The Iranians also point out that, in contrast to some other governments' press statements, Iran does not object to oil price cuts "under any conditions," but only to cuts made without "prior discussion" with Iran. As the Shah himself has repeatedly stated, if the price cuts are commercially necessary, Iran will accept them—as long as the proposed action is discussed with his government in advance.

* * * *

Just how do Iranians foresee the future role of OPEC?

"If managed by sound persons, and not used for political purposes," comments one important official, "we can see considerable usefulness in OPEC.

"After all, the oil companies have many associations and organizations, like the American Petroleum Institute and so forth, for discussing common problems and policies. It's about time the producing countries had some similar vehicle for keeping member countries informed of the latest developments affecting them, whether in geology, drilling, refining, transportation, or marketing.

"For example," he notes, "OPEC could be most helpful in analyzing the impact of any new sources of supply on our over-all markets, such as the new gas developments in the Sahara, and forewarn member countries of what is likely to happen.

"OPEC could also be most useful in helping coun-

tries unify their oil policies, within reasonable limits, and particularly in unifying accounting procedures.

"For instance, the 50-50 profit sharing formula varies greatly today, and the question always keeps arising: 50% of what? Iran's 50-50 is different from, say, Saudi Arabia's.

"At present, people see only where another country has an advantage in some specific clause, but don't see the advantages they have themselves in other clauses.

"Let me give you a case: Iraq gets crude oil for the government refinery at Daura at 4 shillings per ton, plus the cost of pumping it from the fields to the oil company's K-3 pumping station. Iran gets its crude oil at 10 shillings a ton. The question is always being asked here why Iraq gets preferential treatment compared to Iran.

"The answer is that it does not. Iraq, you see, had to build its own pipeline from K-3 station to Daura, as well as finance the construction of its refinery itself. We, on the other hand, get our crude delivered through the consortium system, and refined at the Abadan refinery, without having to finance or build anything. This more than makes up the difference.

"Or take another case: Venezuela charges oil companies customs duties on things they import, while we do not, and people also point to that. Yet they don't realize that Venezuela permits the companies to deduct those duties from income taxes. Or, that Venezuela allows the oil concessionary companies to make a profit on local marketing within the country, while here—and in Iraq—foreign companies are not permitted local marketing profits.

"If such points could be unified, it would do away with a lot of dissatisfaction, because people always look at the better points in someone else's agreement."

* * * *

At the same time, it is clear that there are several points on which the Iranian Government is dissatisfied with current operations.

For instance, there is growing annoyance—almost bitterness—over NIOC's lack of participation in some of the policy-making decisions of the consortium participants.

"We must be treated more as partners," comments one NIOC official.

"Policy making decisions in London are currently so shrouded in secrecy and mystery," says another, "that this causes excessive suspicion and distrust. If we could participate in some of these meetings, it would help greatly. The important thing is to dispel this feeling of suspicion before it grows too far."

* * * *

Another point causing considerable dissatisfaction here is the feeling that the process of "Iranization" of the consortium operations is proceeding "too slowly."

"Far too many expatriates are still being used, particularly in posts that could be filled by Iranians," stresses one official. "In fact, we sometimes feel that at least some of the expatriates are being sent here for training, rather than the other way around. At any rate, too many come here for two-year terms, only to be replaced by other expatriates for other two-year terms, without adequate effort to train Iranians to take their places."

These are, of course, complex questions, which require much more case-by-case study than can be made by a casual visitor. But it would appear, at least to this observer, that more effort along both these lines could prove rewarding to the consortium—if only by dispelling some of the growing bitterness on these points.

* * * *

And, last, but not least, there is marked dissatisfaction here over the "relative" growth in Iran's oil production.

Iranians were most particularly incensed recently when they saw what the Middle East production figures for the first nine months of 1960 had to show: Iran's output was up only 10.6% over the same period last year, compared to 16.4% for Kuwait, 15.1% for Iraq, and 13.5% for Saudi Arabia.

It was the comparison with the other countries that was galling—and caused widespread adverse comment in the press.

"We didn't even come up to the Middle East average of 13.6%," comments one NIOC official angrily. "Is this how we are to be treated?"

The Shah insists that "at least one-half" of the total annual increase in Middle East output should go to Iran—the same proportion urged by Entezam in his discussions with oil companies in London and New York last August and September.

More recently, Iranians have noted with some satisfaction that, since Entezam's forceful presentations of the Iranian viewpoint to the oil companies, Iran's production has in fact improved. October's output soared to a new all-time high of over 1,200,000 barrels daily, surpassing the previous record by some 12%.

Unofficial estimates now indicate that this higher rate, or something close to it, will be maintained during the fourth quarter of the year.

"At present," concludes one top NIOC official, "Iran's production amounts to little over 20% of the Middle East total. Our goal is to be restored to the 60% share of Middle East production we had before the 1951 shutdown under Mossadegh. If total Middle East output is now running around 5,000,000 barrels daily, this means our share should be somewhere about 3,000,000.

"By this, we don't mean that other Middle East states must actually be cut back from present rates. What we mean is that our share of the current and future growth must be high enough to restore us to this position as soon as possible."

RHIA*

*
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What's New / IN THE INDUSTRY

Union Oil Co. of California believes the government will be successful in its antitrust suit against Phillips Petroleum Co. Chairman Reese H. Taylor, in a letter to Union stockholders, pledged the company's cooperation to the Justice Dept., and added, "We may reasonably expect that the government will be successful in this suit." The antitrust suit, filed in Los Angeles, seeks to bar Phillips from acquiring any more of Union's stock on the ground that such action could jeopardize competition. Basis of the government suit is that Phillips already has acquired about 14.8% of Union's stock, and its allegation that it does not feel that the stock purchases are "solely" for investment purposes.

•

The U.S. Court of Appeals in Washington feels that the Federal Power Commission should, and could, do more to control gas prices. The court remanded two FPC decisions for further hearings, and said the record does not justify the conclusion that the commission "adequately performed" its responsibility to make a "real administrative effort to hold back prices." Both cases involved Texas Eastern Transmission Co., and both were appealed by the New York Public Service Commission.

•

The U.S. Supreme Court has issued a "final decree" on offshore lands litigation. But many issues are still to be settled. The court this week adopted a formal order embodying its decision in May to allow only Texas and Florida three-league jurisdiction into the Gulf of Mexico. Louisiana, Mississippi, and Alabama are restricted to three miles. A special master may be appointed later to rule on the precise seaward limits of all five coastal states. Probably only Louisiana will be surveyed, however. Once the lines are set, the states must turn over lease money to the U.S.

•

Arabian American Oil Co. is discontinuing its private trans-Atlantic airline at the end of this year. The discontinuation is part of the company's current economy drive. The last flight out of New York will be on Dec. 28 to Dhahran and back. After that, company personnel will use commercial planes.

•

Texas City Refining, Inc., has purchased the properties and assets of the Sid Richardson Refining Co. The refinery itself, once rated at 17,500 b/d, has long been inoperative, and reportedly is obsolete. Texas City's primary interest in the purchase was for the land and the storage tanks. It has been leasing the plant site for the past several years, and will take over the properties formally on Jan. 1.

•

Tennessee Gas Transmission Co. has realigned its corporate setup. Formation of Tenneco Corp. to own TGT's nonpipeline properties, and Tenneco Oil Corp. to operate TGT's producing, refining, and marketing operations, was announced by TGT president Gardiner Symonds. The realignment will separate more clearly TGT's government-regulated pipeline business from its oil operations and other nonutility interests.

•

The Oil, Chemical & Atomic Workers Union won the runoff election at the Baytown (Tex.) refinery of Humble Oil & Refining Co. OCAW defeated the Baytown Employees Federation, an independent union which had sought to regain recognition.

Sheffield's Alloy Steel Center Helps Put This

Tough Customer in the Sky

tough alloy steel from Sheffield in many parts

Here you see the A4D-2N Skyhawk, versatile attack bomber of the U. S. Navy and Marine Corps. Though America's smallest and lightest jet combat airplane, the Skyhawk packs a heavyweight punch — can even carry guided missiles and nuclear bombs.

Built for action, speed and durability, the Skyhawk has stamina in every part. And many of these parts are fashioned from 4130 Aircraft Quality Plate—a product of Sheffield's Houston plant, the alloy steel making center for the Gulf, Southwest and West. Quantities of this same plate also take to the air with the B-47 bomber. Other Sheffield alloys are part and parcel of the Redstone and Nike missiles.

Fine constructional alloy steels are a specialty of the Houston plant. Alloying elements range through the chemical alphabet from Aluminum to Zirconium. Whatever the need for strength, hardness, toughness, machinability or whatever type of heat treating is required, the Houston plant can meet it.

And industry is making wide use of this skill. Sheffield's Houston plant has become the most diversified steel producing center west of the Mississippi. Sheffield's alloy specialists stand ready to help work out the solution to your constructional problems.

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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
December 16, 1960

President-elect Kennedy will play a bigger personal role in oil import policies than has his predecessor.

But he will move cautiously, with detailed study before making any changes.

Kennedy will, of course, rely considerably on his advisors—but not to the extent President Eisenhower has done. So far as is known, Eisenhower has not rejected any import policy changes that his Cabinet members and aides have recommended. Kennedy will call more turns himself, and there will be more surprises.

The new Interior Secretary, Stewart Udall, will confine himself largely to administering the imports program. When newsmen asked Udall about oil imports, he did not hesitate to make two points: First, he has limited knowledge on the subject. Secondly, he expects to take his cues from the White House. In the past, the policy-makers have been Cabinet, even sub-Cabinet officers.

With most of the Kennedy Cabinet now formed, watch next for the vital second and third levels—under secretaries and assistants. The Cabinet heads will have some say in naming their deputies, but Kennedy will make a number of personal choices. In the Interior Dept., key jobs of interest to oil men are the Under Secretary and the Assistant Secretary For Mineral Resources.

•

Pentagon petroleum-buyers are still waiting for directions on cutting overseas buying. The Military Petroleum Supply Agency and all armed services have their studies on reducing procurement abroad to help stem the balance of payments deficit. These studies are now at the Pentagon, and an order on petroleum purchases is expected this month from Secretary of Defense Gates.

The International Cooperation Administration and the military are both worrying about where oil dollars go. ICA has ordered a buying ban in 19 foreign countries of most commodities, including oil. The agency also wants to cut its procurement authorizations outside the U.S. to about 20% or 25%. At the present time, about 60% of ICA-backed purchases are made abroad.

But one big problem plagues ICA and the Pentagon in petroleum purchasing: How much of a dollar spent with a U.S.-based International oil company remains in this country? Deliveries are usually from foreign subsidiaries, and the government agencies are trying to figure how the dollars can be put on the U.S. side of the financial ledger.

•

Two oil industry critics from Congressional staffs may get key antitrust jobs under the Democrats. They are Paul Rand Dixon, chief of the Senate antitrust subcommittee staff under Sen. Estes Kefauver (D., Tenn.), and Herbert Maletz, his counterpart on the House antitrust subcommittee of Rep. Emanuel Cellar (D., N. Y.)

Dixon may become a member of the Federal Trade Commission, perhaps chairman. Maletz is under consideration to be Assistant Attorney General in charge of antitrust in the Justice Dept. Both have been highly critical of oil industry operations in their jobs as Congressional aides.

REMEDIAL VERSATILITY

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Simple design . . . easy to run in and set on tubing, drill pipe or wire line—for general application in any well . . . regardless of depth or pressure; effecting a positive fluid shut-off from either direction . . . establishes the "DM-DC" Drillable Squeeze Packer as the industry's most versatile tool for either squeeze cementing, or as a bridge plug.

These high quality and dependable squeeze packers are used to form an effective plug in "squeezing" cement or fluid below packer through tubing or drill pipe at any predetermined point behind liner or casing; around shoe or shoe joint. Can also be used as casing bridge plugs for preventing movement of fluid through packer from either direction.

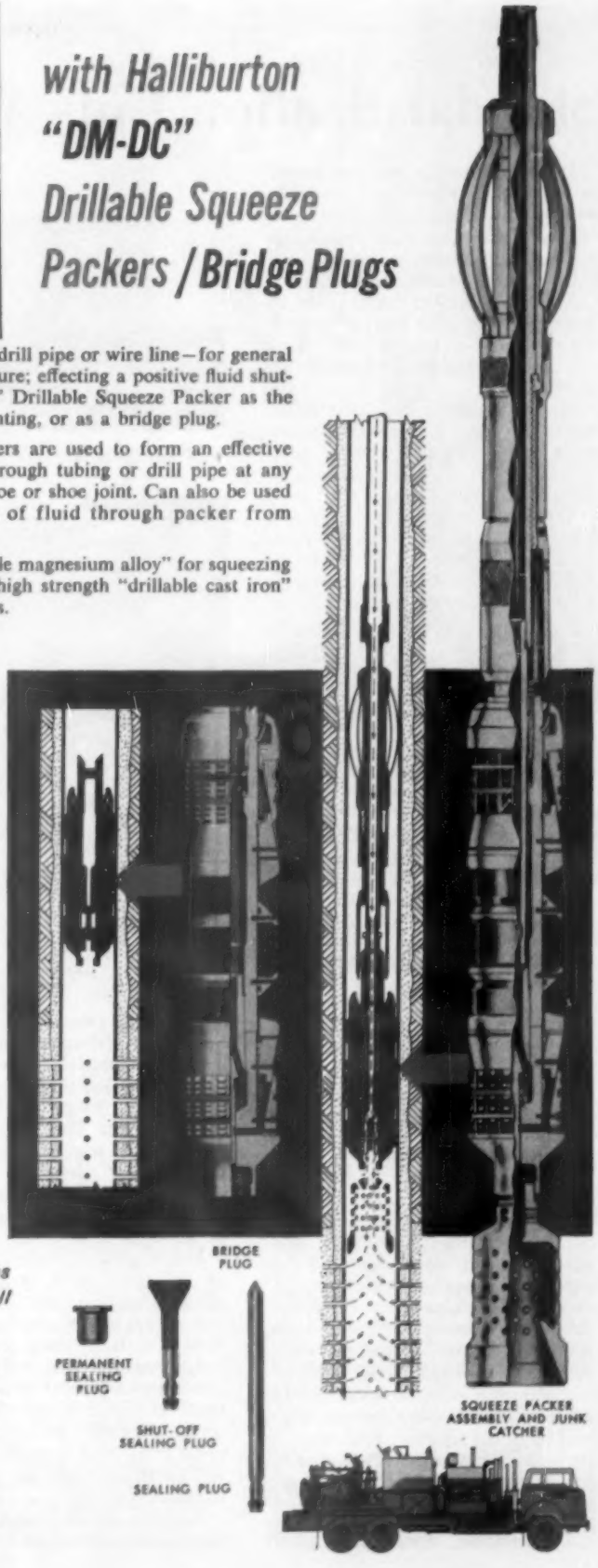
Type "DM" is constructed of high strength "drillable magnesium alloy" for squeezing or temporary bridge plugs . . . type "DC" is made of high strength "drillable cast iron" for squeezing or permanent or temporary bridge plugs.

Several additional advantages and outstanding features of this packer are:

- Tubing and circulating valve are free from packer before squeezing begins; can be picked up as desired between stages.
- Tubing and circulating valve can be removed from well any time for tubing leak repairs; then re-enter the packer.
- No strain is taken on tubing while squeezing.
- Packer will withstand *any* pressure that can safely be put on casing or tubing.
- The back pressure valve is the sealing cup type which provides a more positive seal.
- Can be set with Halliburton Electrical Wire Line Setting Tool, and the "DCM" Cup Type Setting Tool . . . methods that afford substantial savings in time, wear on casing, tubing, drill pipe and rig.

A shut-off sealing plug to prevent contamination, may be pumped down 2" or 2½" tubing, between fluids, and shut off in the packer.

A "DM-DC" Squeeze Packer may be converted into a bridge plug by dropping a sealing plug down through the tubing or installing a permanent sealing plug before running into well.



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Standardization Cuts Waterflood Costs

Standardization is the key factor in cost-cutting waterflood programs initiated by Home-Stake Production Co., of Tulsa. One direct result: expanded operations in areas previously considered uneconomic.

"The solution was forced on us by the increasingly high costs of instituting waterflood programs," says Frank E. Sims, Home-Stake's production vice-president.

"It was reaching the point where we were looking at a $100,000 investment for water treatment and pressurization facilities each time we considered a waterflood prospect.

"This high initial cost discouraged the company from making investments in prospects having recoverable reserves of less than one-half to three-quarters of a million barrels. As a result, we were being forced to bypass numerous smaller operations which reservoir studies indicated to have excellent potentialities.

"Our basic problem was to cut waterflood installation costs."

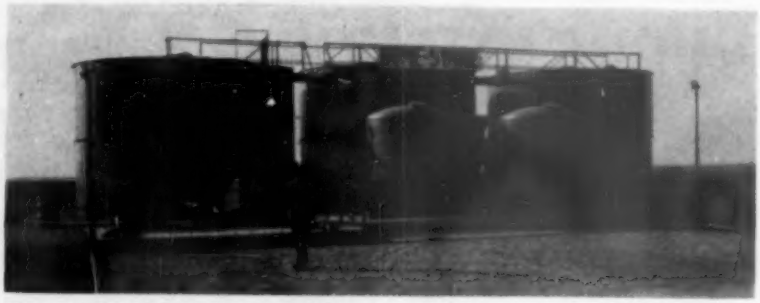
Key to Home-Stake's cost-cutting approach is a company-designed, shop-fabricated, skid-mounted, portable water plant whose cost is less than half that of its conventional counterparts.

The plants are standardized completely as to component parts and construction techniques, and are suitable—with minor modifications—for installation on waterfloods with water requirements ranging from 2,000 b/d to 10,000 b/d. The smaller unit costs less than $25,000, the larger less than $50,000.

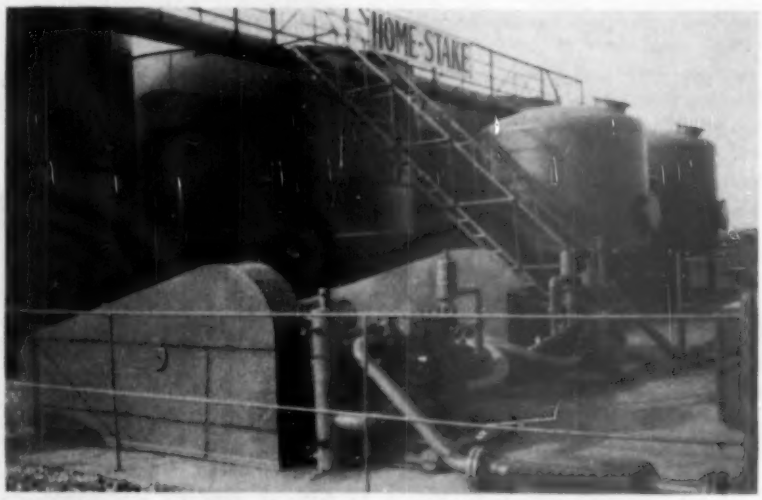
Since last year, the company has installed three small plants and one large one. Another large plant is in the early stages of construction.

Says Sims: "Our original design was intended for floods requiring 2,000 b/d of water or less, since it was our thinking at the time that skid-mounted units would be applicable primarily on small projects.

"Based on subsequent experience, however, we have gone the full cycle, and are now installing portable plants on some of our largest floods. A 10,000 b/d plant was installed earlier this fall on our 1,100-acre Keighley waterflood unit in Butler County, Kan., and we are working on a sister installation for our North Glenpool waterflood project in Tulsa County, Okla."



STANDARDIZED WATER PLANT at the Keighley unit, Butler County, Kan.



CLOSEUP of the 10,000 b/d Keighley plant shows injector pumps and filter units.

The portable, standardized plants have led to cost reductions in four basic areas: (1) design and engineering; (2) materials purchasing; (3) fabrication; and (4) labor.

All basic design and engineering work has been done from scratch by Home-Stake's own engineering department. Using standard, readily available equipment and accessories, original plans were drawn and submitted to Murdock Tank & Mfg. Co., Tulsa.

Mass-production techniques applied by Murdock have permitted completely fabricated models to be turned out within a few weeks. Formerly, Sims reports, it took approximately five months to plan and construct a conventional water-treating plant in the field. Since all materials used in constructing the portable plants are taken from stock or purchased locally, transportation costs are substantially reduced.

Logistics are no longer a problem, since all component parts are grouped in a central location before fabrication begins. There is, Sims explains, "no running back and forth from the field to pick up small parts which had been overlooked until needed."

Additionally, use of standard parts —many of them having application for other purposes—has enabled Murdock to order in car lots in many instances, thereby reducing unit costs.

Fabrication and labor details appeal particularly to Home-Stake, says Sims, "because all work is done under contract by experts. We have no added personnel on our payroll except for relatively nonskilled field personnel used to make field connections and to pour concrete pads.

"Labor is transferred from the field to the shop, where an assured pool of skilled technicians is available at all times. Inclement weather is no longer a concern, and mistakes—if any are made—are more easily corrected."

For projects in relatively remote

Solar gas turbine stimulates production of oil and gas wells

OIL FRACTURING OPERATIONS — used to stimulate production of oil and gas wells — must take place at the well site. This means that fracturing and acidizing pumping units must be lightweight and mobile — yet provide in excess of 1000 hydraulic horsepower for most operations.

The Western Company's new 1000 hydraulic horsepower fracturing pump is powered by Solar's *Saturn* T-1000 gas turbine engine. Up to 1250 hp is required to drive the pump in this application. Weight of the truck and turbine-driven fracturing unit is significantly less than 500 hp diesel units currently used by Western. The *Saturn* T-1000 turbine-powered pump delivers twice the hydraulic hp of the diesel units — reducing by 50% the number of units needed per operation.

The *Saturn* T-1000 engine weighs only 1200 lbs and occupies less than 51 cubic feet. It is simple in design, starts instantly from —65 degrees F to 130 degrees F, and takes full load in seconds without warmup. It has been engineered for simplicity of operation and long life under industrial conditions. As a compact and reliable power source for generators, compressors, pumps, and other oilfield equipment... investigate the *Saturn* T-1000 gas turbine. There's a Solar gas turbine for almost every application in the 50 to 1250 hp field. Write for particulars to Dept. H-189, Solar Aircraft Company, San Diego, California.

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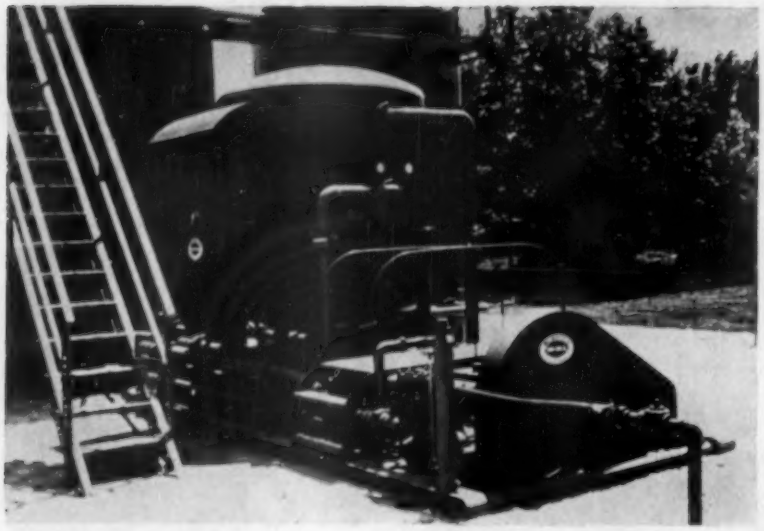
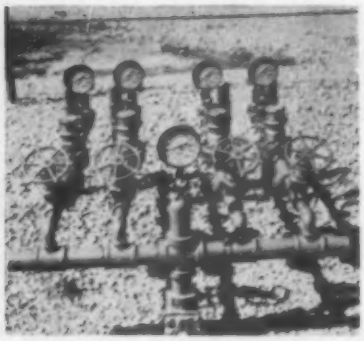




▲ METER STATION permits easy checking of many wells at one spot.

◄ PORTABLE WATER SYSTEM in Hughes County, Okla., has 2,000 b/d capacity.

locations, Home-Stake formerly found it necessary to assign an engineer to the field for periods of up to five months to oversee construction details.

Now, says Sims, a ten-minute drive once a day from the home office to the shop is sufficient.

It takes from two to three weeks to install and connect the portable plants once they reach the field.

Electricians' fees, reports Sims, have been cut by some 85%, carpentry eliminated altogether, and cement work greatly reduced. Cement pads required for the portable units cost approximately $450, as compared with cement costs of $2,500 to $3,000 for permanent installations.

Standardization of parts and equipment permits the same basic design to be used for any field installation, regardless of anticipated plant capacity.

The 2,000 b/d plants use postive-displacement, 50-hp. triplex pumps for water injection purposes. For filtration, a 1-hp. centrifugal pump is used; for backwash, a 3-hp. centrifugal pump.

The three pumps, along with 6 x 5-ft., graded-bed, pressure-type filter, plus requisite piping, wiring, and controls, are all mounted on a single 7½ x 15-ft. skid.

The 10,000 b/d plant, while constructed along the same basic design pattern as its smaller counterpart, is mounted on three separate skids for easier transport. A pair of 8 x 5-ft. filters, plus controls and backwash and filter pumps, are mounted on one 8 x 22-ft. skid.

Two 90-hp. triplex injection pumps are individually mounted on 4 x 12-ft. skids.

The large plant uses a pair of 2-hp. centrifugals for filter pumps and a 7½-hp. close-coupled centrifugal pump for backwashing.

Plans for 4,000 b/d and 6,000 b/d plants, both of which are to be installed on planned waterflood projects, are now on the drawing boards of Home-Stake's engineering department.

"When we go over 5,000 b/d capacity," reports Sims, "it becomes necessary to go to two skids. The limiting factor is portability, and this ties in directly with the required size of the filter tank and injector pump.

"Thus, the primary difference in the 2,000 b/d plant and the 10,000 b/d plant—or any intermediate size—is one of arrangement and size of major equipment. The same basic design is followed throughout, and many smaller parts are interchangeable on all models."

Although treating-plant design has been the major factor in Home-Stake's standardization program, several other areas lend themselves equally well to the principle.

Company president Robert S. Trippet observes: "We believe our standardization program to be an outstanding example of cost reduction through technological advance. It is our basic approach to better profit margins."

Standard order forms have been prepared for (1) single meter runs; (2) individual wellhead connections, and (3) basic metering stations.

Each of these lists contains a comprehensive rundown of all items that are necessary to equip a single unit.

To obtain the total number of parts required for project-wide installation, Home-Stake's purchasing agent simply multiplies each order form by the total number of units required, and submits the compilation to a supply house.

The meter-run list contains 15 different items; the basic metering station lists 9; and the individual wellhead connection lists 8.

Another example of cost-cutting has been the use of 762-volt electrical systems—where their use is feasible—on various Home-Stake waterflood properties.

The high-voltage system permits one bank of transformers to serve approximately ten wells—a chore that would require some three banks of conventional 440-volt transformers.

Use of the high-voltage system reduces installation costs and lessens the amount of power needed, the company says.

Application of the standardized, shop-fabricated theme extends even to fences used around metering stations, input wells, and plant sites.

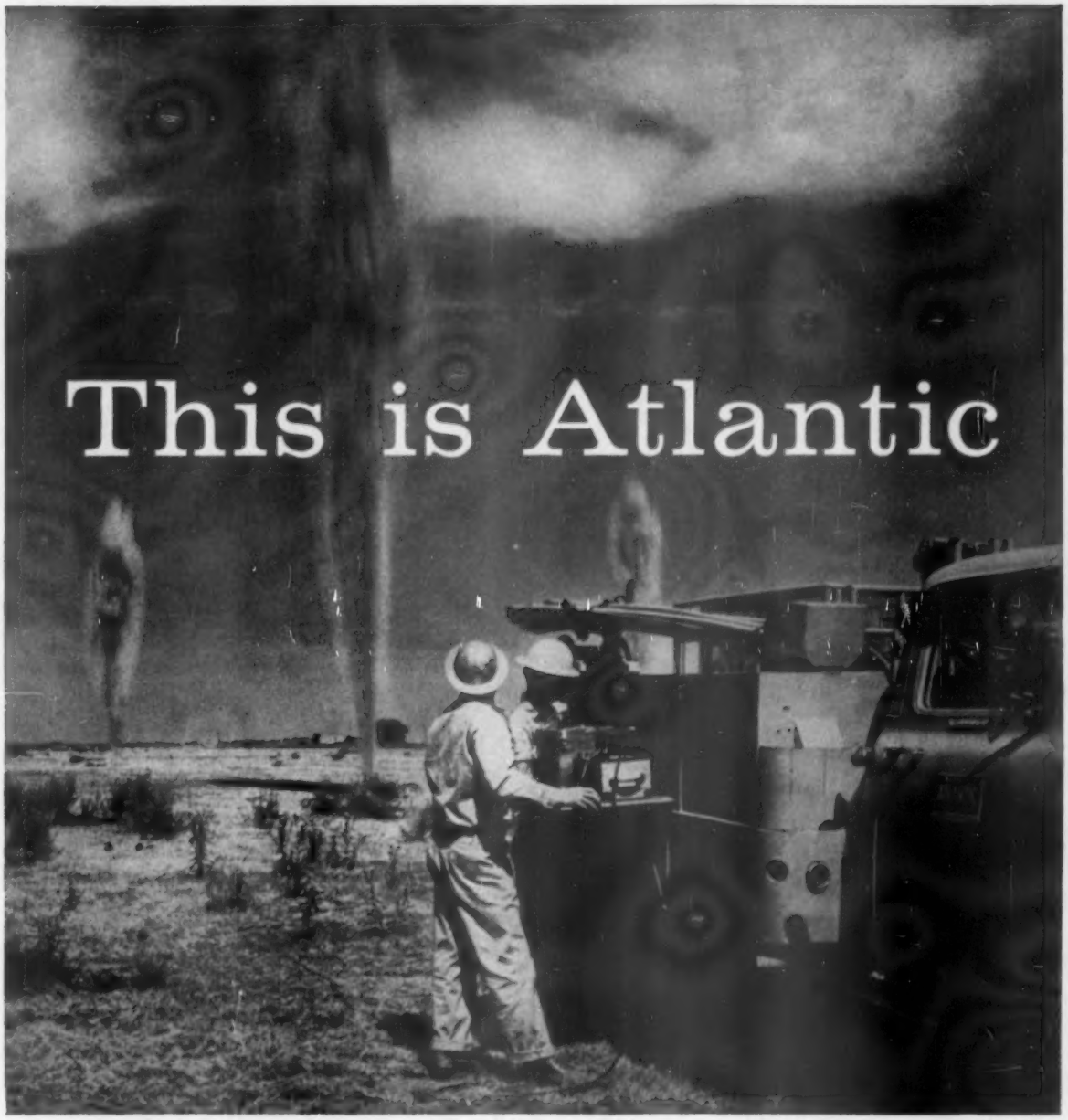
Used pipe from the field is cleaned, welded, and painted in the shop to form 8-ft. prefabricated fence sections, which expedite installation and increase salvage.

Field work, too, has been standardized, to reduce labor and material costs.

Plant sites, for example, always are located close to water-supply wells to reduce electrical and piping needs, and to permit easier supervision.

Meter stations, rather than being located at individual—and often not easily accessible—wellheads, are spotted near lease roads.

This permits the pumper—who often also acts as supervisor of the plant—to check from three to seven wells with one stop.



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Magnet Positions This Jet Perforator

A magnetically positioned capsule jet perforator, said to give constant perforation quality through the producing interval, has been developed by Schlumberger Well Surveying Corp.

Schlumberger's 1 11/16-in. Magna-Jet is designed for through-tubing expendable perforating.

The company says that the magnetic orientation, coupled with 120-degree, two-direction phasing, offers "for the first time, a consistently high-level performance in the fixed-charge expendable perforator."

Schlumberger's Magna-Jet is designed to give optimum results for small-diameter guns used to perforate large casing.

The company notes that one of the major objections to the through-tubing expendable gun to date has been its very small size compared to the casing usually being perforated.

A 1 11/16-in. gun, for example, is designed to pass through 2-in. production tubing. Below this tubing, however, the gun is usually required to perforate 5½-in., 7-in., or even larger casing.

Since the gun generally lies to one side of the casing, due to wellbore deviation, individual shot clearances with the usual gun phasings could vary from a low of zero to a high of 4½-in. in 7-in. casing. "Obviously," says the Schlumberger engineering report, "performance on the long-clearance shots will be drastically reduced.

"Penetration will vary as much as 50%, while entrance holes may drop to pinhole size."

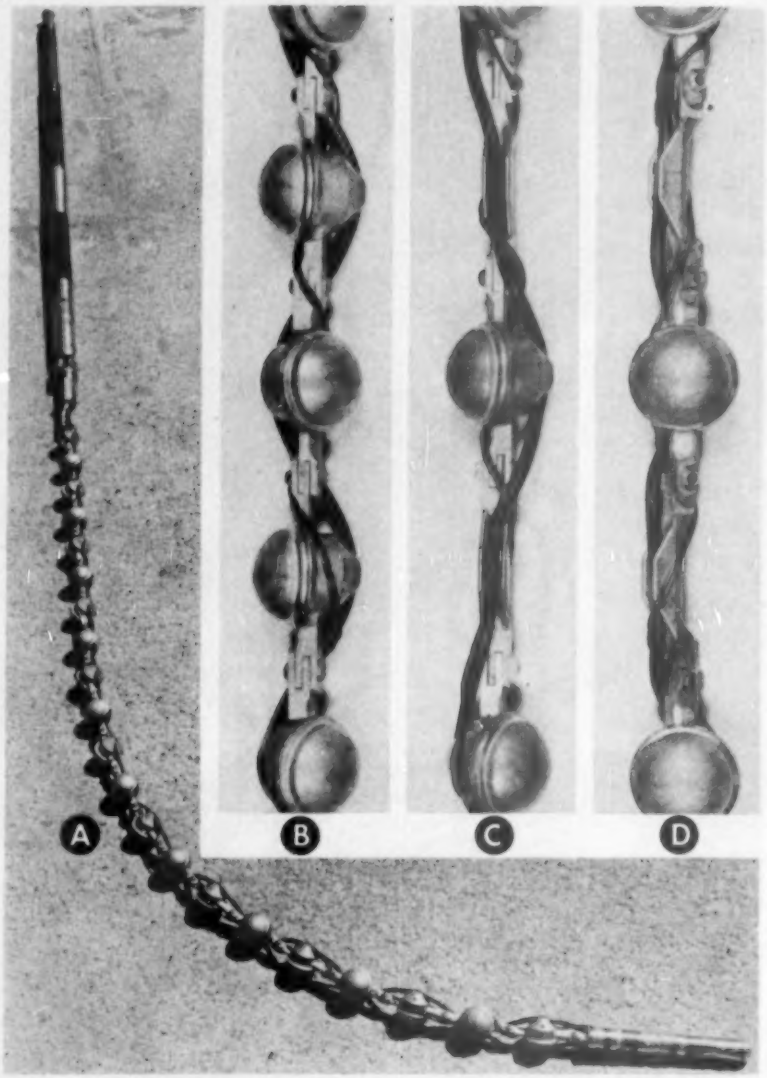
The company adds that many completion operations are sensitive to such variations. On a sand consolidation operation, for example, "the feeling is becoming more widespread that 'pinhole' perforations may not be taking their share of the treating material. The same reasoning could apply to squeeze-cementing operations."

The company adds that consistent performance is achieved on every shot, regardless of casing size.

The 1 11/16-in. Magna-Jet is made up of encapsulated charges connected in series to form the gun length required.

Recommended maximum gun length is 20 ft. This limit is specified to maintain high perforation quality throughout the productive zone.

The gun has a maximum shot density of four shots per foot when set to fire at 120-degree phasing, in two directions.



MAGNA-JET perforator developed by Schlumberger Well Surveying Corp. (a) has 1 11/16-in. diameter with encapsulated charges connected in series to form complete gun. Typical gun phasings: (b) 4 shots per ft. at 120 degrees, two directions; (c) 2 shots per ft., 120 degrees, two directions; (d) 2 shots per ft., 0 degrees, one direction.

Frangible spacers are provided to reduce shot density, if desired.

The Magna-Jet also can be assembled to fire two shots per foot at 0-degree phasing for special applications.

Retainer clips have been eliminated in the Magna-Jet by use of a tapered groove that firmly holds the detonating cord in place to assure proper initiation.

Bottom-up firing is adopted to assure the operator that the complete gun has functioned properly.

Schlumberger says the Magna-Jet cuts volume of debris to one-half that produced by capsule jets of the same size.

A minimum weight of material is used in the charge design. The charge case, for instance, is die-cast of special frangible aluminum alloy developed by Schlumberger for expendable perforators. The material is characterized by high strength and low ductility, says Schlumberger, resulting in a case that offers excellent breakup characteristics.

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Starting with the January 6th issue, top oilmen all over Europe will be able to read Petroleum Week promptly. Thanks to the speed of jets, copies flown to Europe will be mailed from the continent within hours after arrival... for fast delivery to Europe's important petroleum industry.

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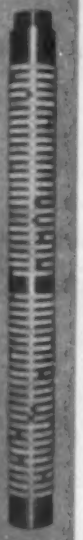

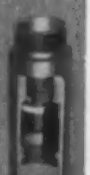

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Nitrogen Used in Well Completion

Nitrogen is being used extensively in the Southwest for fast and efficient well completions.

More than 300 wells have been completed or reworked with the assistance of nitrogen. More than 50 oil companies—including most majors—have used the nitrogen treatment.

"We've used nitrogen for various purposes on 20 wells," said an engineer for one major company, "and have been pleased with the results on each well."

One indication of the further growth of nitrogen application in well-servicing is the formation of two firms to provide the service.

The two companies are Nitrogen Oil Well Service Co. (NOWSCO) and Nitrogen Engineering Service Co. (N_ESCO), both in Houston.

NOWSCO started as a division of Big Three Welding Equipment Co. and is now operating as a separate firm with H. K. Smith, president of Big Three, as its president.

N_ESCO is a partnership of George E. Thompson, D. B. Wheeler, and James H. Howard.

The biggest use for nitrogen at present is as a displacement agent for swabbing.

Swabbing operations using nitrogen can be achieved, explains A. W. Smith of NOWSCO, simply by pumping it in gaseous form into the tubing string at the surface.

Under pressure, the nitrogen forces the well fluids down the tubing and out the well through the annulus between the casing and the tubing.

Smith estimated that a 8,000-ft. well can be cleared of well fluids in approximately 25 minutes with nitrogen, whereas it might take five to six hours to swab a well conventionally.

Other advantages cited for nitrogen in swabbing are:

- It can be used at night without any legal restrictions, since it is an inert gas and is nonflammable.
- It is comparable in cost to conventional swabbing.
- Plastic-coated tubing that is sometimes scarred by conventional swabbing is unmarked by nitrogen.

Nitrogen also can be used as a displacement agent to solve other well-completion problems.

The gas can be utilized to force either acids or corrosion inhibitors to predetermined points downhole while there is fluid in the tubing. This eliminates the need for swabbing.

"Since nitrogen is a gas, after it pushes the inhibitor or acid downhole, it will flow back to the surface and into the atmosphere when desired, leaving the fluid in place downhole," Smith said.

In addition, injection of nitrogen through the annulus between the casing and the tubing enables the operator to start the well flowing without installing gas lift valves beneath the surface.

The gas will travel down the annulus to the bottom of the tubing and push the production fluid up the tubing string.

In addition, the gas is being used as an aid in perforating.

Use of nitrogen, said Smith, allows the formation fluids to be brought to the surface under control, thus reducing chances for blowout.

No special equipment is needed, he added.

To perforate with nitrogen, here's what is done:

The gas is used to displace the well fluids down to a predetermined depth.

Packers are set and the wellhead is secured and positioned. Then the perforating gun is lowered into firing position.

After the zone is perforated, the gun is brought to the surface through a "lubricator," a device set on top of the Christmas tree.

Then the nitrogen is bled off and formation fluid follows the nitrogen to the surface.

Nitrogen also is being applied as an additive to drilling mud to prevent blowouts and lost circulation.

On several recent jobs, NOWSCO mixed nitrogen with mud to lighten the weight.

By controlling the volume of nitrogen mixed with the mud, said NOWSCO, "we can keep the mud heavy enough to prevent blowouts and yet light enough to halt lost circulation."

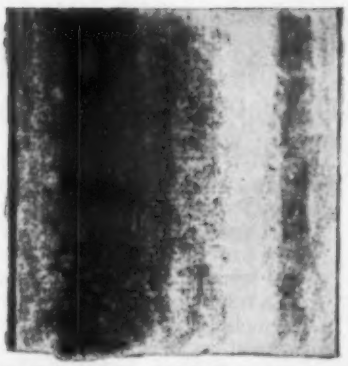
The nitrogen arrives at the well site in a liquid form to ease transportation and handling and is then converted to gas for use in completing the well.

The material itself and all of the equipment needed at the well site—the vessel, evaporator, pump—is hauled on one truck.

At the well site, the —320F liquid is pumped into a high-pressure evaporator also mounted on the truck to transform the liquid into gas.

The nitrogen is transported in 2,000-gal. vacuum-type vessels.

The nitrogen is injected into the well at up to 10,000 psi. at 80F.



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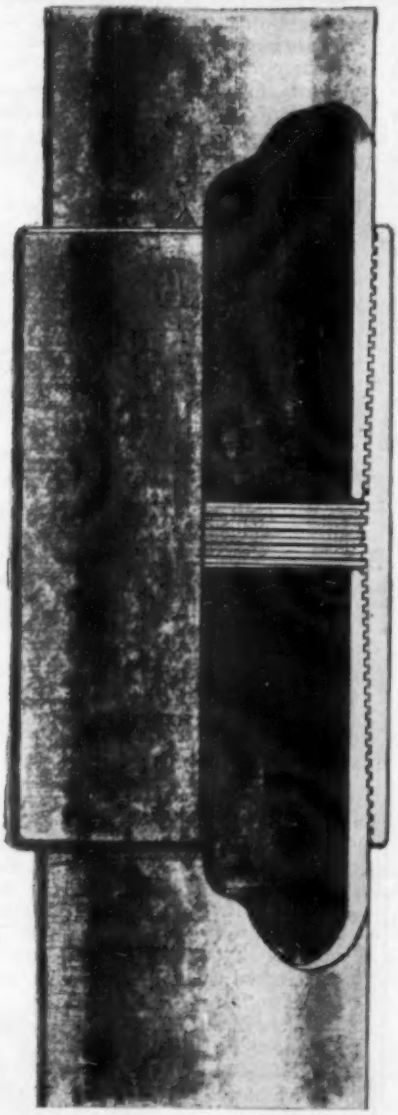

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What's New / IN EXPLORATION, DRILLING, PRODUCTION

El Dorado Field Is Bustling Again

The 45-year-old sprawling El Dorado field in Kansas is beginning to boom again.

Stepped-up activity was touched off this month when Cities Service Oil Co. announced it would drill approximately 50 holes immediately.

With the exception of the Arbuckle lime, all horizons to be tapped are being repressured by waterflooding.

Six drilling contractors are at work in the Butler County field. Half of the new tests are expected to be oil producers, the other half will be water injection wells.

•

Hit Interior's Procedure On Wildlife Ruling

A legislative battle appears in the making over the Interior Dept.'s procedure in putting its new wildlife ruling into effect.

Sen. Clair Engle (D., Calif.) rapped the department, saying, "Not only did the department effect this regulation without notice, but it even went as far as to say the very next day that notice of the action would have been 'contrary to the public interest'." Earlier in Alaska, Sen. E. L. Bartlett (D., Alaska) criticized the department's action on the same grounds.

Capitol sources said that the new ruling could mean tighter restrictions on oil and gas lessees in these areas, depending on how it is administered. The regulation ends drilling or prospecting on wildlife refuge lands without consent of the Secretary of Interior.

•

Prefab Gas Plants Catch on in Canada

Look for 20 or more small, prefabricated gas processing plants to spring up in Western Canada before the end of 1961.

That's what E. D. Loughney, president of British American Oil Co., says will be needed as new fields are brought into production to meet growing export demand. British American, itself, has just placed its first dry desiccant-type prefab gas processing plant on stream near Gilby in Central Alberta. The plant, which is largely automatic, took little more than a month to assemble. It was manufactured by Black, Sivalls & Bryson. Shop fabrication made possible very rapid assembly of interconnection sections in the field, the company says.

The plant, designed to supply a maximum of 15-million cf/d of gas at 850 psig. and 80F, is basically a three-tower adsorption unit with a condensate stabilizer column and open regeneration circuit. Stabilized condensate recovery will be 210 b/d, B-A says.

•

Various problems involved in unitizing oil fields were outlined last week at the annual meeting of the Interstate Oil Compact Commission in Phoenix, Ariz.

In an analysis of engineering bases for participation in a unit agreement, Anwar A. Khan, deputy direction, department of mineral concessions, Pakistan, and Harry H. Power, professor of petroleum engineering, University of Texas, pointed out that the justification of a particular formula needs an intimate knowledge of not only the physical factors involved, but the character and objectives of the participants.

Although the perfect plan is one for the future, they said, a high degree of accomplishment is realized when the formula is finally adopted after lengthy meetings and discussions by the many and diversified interests in a cooperative unitized operation.

•

The Texas Railroad Commission has approved waterflood and pressure maintenance operations in three fields slated to boost ultimate recovery by 8.8-million bbl.

Largest project is that of Pan American Petroleum Corp. to boost recovery by 4,655,000 bbl. by a waterflood of the San Andres reservoir in Slaughter field, Cochran and Buckley Counties, West Texas.

The two others are a waterflood by J. R. McDonald and J. S. Hillsman of the Rosenburg sand in Billings field, Webb county, increasing recovery by an additional 2,124,200 bbl., and pressure maintenance operations by Humble Oil & Refining Co. of the Devonian reservoir, Cordona Lake field, Crane County, with additional recovery estimated at 2-million bbl.

•

The Alaska Oil & Gas Conservation Commission has approved Standard Oil Co. of California's request for closer well spacing in the Swanson River field on the Kenai Peninsula.

Stancal's request for 80-acre spacing was granted on the ground that the Hemlock sands in the Swanson River field are not continuous. State laws prescribe 180-acre spacing. The exception was granted for 18 months.

•

Work is under way on the multimillion-dollar West Whitecourt gas plant in the Windfall field, 25 mi. northeast of Whitecourt, Alberta. Pan American Petroleum Corp. is operator of the plant. Other owners are Hudson's Bay Oil & Gas Co. and Canadian Fina Oil Ltd.

Brown & Root is building the plant, scheduled for completion by Jan. 1, 1962. Raw gas will be processed at an average rate of 177-million cf/d to

To Drill— Or Not To Drill?

Despite all the advances in exploration knowhow, the final decision in drilling still rests with the operator. And a Tulane University specialist says he can help the operator make up his mind.

In a recently published book, "Decisions Under Uncertainty: Drilling Decisions by Oil & Gas Operators," C. Jackson Grayson, Jr., offers an analytical method to help the human brain assimilate and categorize all the factors involved in taking risks.

The uniqueness of Grayson's method is that the intuition, experience, personal feelings, and aspirations of the person making decisions are included in the analysis. That means it also includes desire of the firm or operator to "get rich quick" or to "make a sound investment."

produce 110-million cf/d of dry gas, 650 long tons of sulfur a day, and 14,600 b/d of condensate.

•

Sunset International Petroleum Corp. is extending its diversification in California land development.

The company has announced plans to buy the Sun Gold real estate organization and its Hacienda Hills project for $3.1-million in cash and notes. The Los Angeles oil and gas producer also has programmed a billion-dollar "Sunset City" north of Sacramento (PW—Jul.8'60,p19).

•

A plan permitting long-term leases on oil equipment is expected to ease financing for modernization of plant and equipment.

The new plan is being offered by Nationwide Leasing Co., Chicago, to all companies with a tangible net worth of $1-million. They are eligible for six to 12 year leases for as little as $25,000 worth of equipment. There is no maximum.

Nationwide says this is the first extra-long-term lease plan ever offered by a leasing company.

•

The Alberta government will hold two sales of oil and gas rights covering a total of more than 833,000 acres on Dec. 21 and Jan. 10.

The Dec. 21 sale, covering 649,487 acres, will also include Crown Reserve Natural Gas License No. 111, a 12,960-acre tract in southern Alberta. Also to be offered on that date are Areas No. 1885 through 1893 in northern Alberta.

Parcels No. 769-791 in central, southern, and northern Alberta make up the total 184,376 acres of drilling reservations to be offered on Jan. 10, 1961.

•

Leases on more than 16,102 acres at the Bank of North Dakota sale Dec. 1 brought a total of $57,762 in bonuses—or an average of $3.65 an acre.

High bid at the sale was $152 an acre, for lands on the Nesson anticline, by D. F. McMahon, of Bismarck.

•

Oil and gas leases on 14,620 acres of Colorado state lands will be auctioned Dec. 21 by the Board of Land Commissioners.

Major parcels are eight sections in each of Pueblo and Held Counties. Five parcels, totaling 1,910 acres, will also be offered in Kit Carson County, and five, totaling 2,470 acres, in Yuma County.

•

Top bid at the Dec. 7 Alaska Division of Lands lease sale was $10,026, offered by Union Oil Co. of California and Ohio Oil Co. for a 1,852-acre offshore block in Cook Inlet. It adjoins acreage they already hold.

Two other bonus bids were made at the sale, and also accepted. Richfield Oil Corp. (L.A.) paid $5,778 for three offshore tracts totaling 5,257 acres in Katalla field, and El Paso Natural Gas Products paid $19,521 for five tracts totaling 15,758 acres in Herendeen Bay.

•

Drilling Highlights

West Texas—Gulf Oil Corp. No. 1 C. W. Edwards, section 4, block B19, public school land survey, Ward County, was completed for 340 b/d of 36-gravity oil through 16/64-in. choke and perforations at 6,520-70 ft. in the Leonard section of the Permian lime. The discovery is 3½ mi. south of Monahans field.

Oklahoma—Mayflo Oil Co. No. 1 Kerns, section 36-2n-20e, Beaver County, was completed for 6.8-million cf/d of gas through perforations at 7,690-715 ft. in the Chester. The well is 2 mi. north of Northwest Dower field.

Kansas—Colorado Oil & Gas Corp. No. 1 Hair, section 4-20s-24w, Ness County, recovered 650 ft. of oil and 310 ft. of slightly mud-cut oil on drillstem test at 4,408-23 ft. in the Mississippian. The wildcat is located approximately 2½ mi. northwest of Petersilie pool.

Mississippi—Humble Oil & Refining Co. No. 1 Eloise Hicks Thompson, section 3-9n-1w, Yazoo County, flowed 41-gravity oil at the rate of 198 b/d through perforations at 10,445-53 ft. in the Hosston. The test is 6 mi. southeast of Tinsley field.

Utah—Miracle & Wooster No. 14-1 Government, section 14-11s-21e, Uintah County, flowed gas at the rate of 2-million cf/d from open hole section at 6,595 ft. in the Mesaverde. The wildcat is located approximately 6 mi. south of a shut-in Wasatch gas discovery.

ORCO PROCESS AVAILABLE FOR LICENSE

The ORCO PROCESSES comprise the treatment of hydrocarbon reservoirs with controlled amounts and concentrations of carbon dioxide or admixtures thereof.

These processes are generally used in connection with the secondary recovery of crude oil.

The following United States patents, all issued to and exclusively owned by Oil Recovery Corporation, relate to the ORCO PROCESSES:

Date Issued	Patent Number	
July 15, 1958	2,843,256	Methane and Carbon Dioxide Solutions in Hydrocarbons
March 3, 1959	2,875,830	Method of Recovery of Oil by Injection of Hydrocarbon Solution of Carbon Dioxide into Oil Structure
March 3, 1959	2,875,831	Dissemination of Wetting Agents in Subterranean Hydrocarbon-Bearing Formations
March 3, 1959	2,875,832	Gaseous Hydrocarbon and Carbon Dioxide Solutions in Hydrocarbons
March 3, 1959	2,875,833	Process of Recovering Oil from Oil Fields Involving the Use of Critically Carbonated Water
December 13, 1960	2,964,109	Method of Eliminating Water Resistant Coating from Bore of Injection Wells

LICENSES UNDER THESE PATENTS ARE AVAILABLE FOR USE ON SUITABLE SECONDARY RECOVERY PROPERTIES

OIL RECOVERY CORPORATION

451 Beacon Building — Tulsa 3, Oklahoma

Value Analysis: Latest Money Saver?

- **New technique helps overcome the shortcomings of traditional buying methods. It's based on an evaluation of the relation between an item's function, its quality, and its cost.**
- **It can save an average of 25% in the purchase of routine engineering commodities.**

Today's processing plants are so complex that traditional methods of selecting equipment and supplies are often no longer adequate. A technique known as "value analysis" may be the answer.

E. I. du Pont de Nemours & Co. has been using this new technique with considerable success for nearly three years.

W. R. Campbell, Jr., Du Pont's engineering department test supervisor, described the technique at the recent annual meeting of the American Society of Mechanical Engineers, in New York.

In three years of operation of value analysis at Du Pont, fewer than 3% of the items to which it should apply have been investigated, yet over $1-million have been saved.

Campbell estimates that Du Pont spent about $135-million in 1959 for "engineering process commodities."

These include:

- High-cost, low-volume items, such as large compressors, pumps, motors, heat exchangers, evaporators;
- Low-cost, high-volume items, such as instruments, fittings, valves, gages, containers.

It is in this second group, said Campbell, that the value analysis technique has been most profitable.

Value analysis is a relatively new procedure for evaluating the practical relation between the required function of an item, its quality, and its cost.

Thus, it may result in the purchase of either:

- More efficient equipment at the same price, or
- Equally efficient equipment at a lower price.

The value-analysis technique should provide a return of $6 to $8 for each dollar spent on its application, Du Pont says.

It bases its statement on an average cost reduction of 25% on all items investigated so far.

It was the shortcomings of the conventional methods used for the selection of engineering commodities that led to the adoption of the new technique.

Prior to the establishment of a formalized program, selections were based on:

- Experience, which, valuable as it may be, is time-consuming, and frequently frustrates attempts to try new products that might result in savings.
- Manufacturers' claims, which are often overoptimistic, and cannot easily be reconciled with claims of competitive equipment based on different evaluations.
- In-service tests, which are "probably the most inefficient way of all for selecting equipment," and which require too much time.

The value analysis program at Du Pont is organized under a coordinator, who calls in, for each case, a group of "appraisers" made up of those who specify, purchase, and use the equipment—in other words, the "consumers."

The group, headed by the value analysis coordinator, operates as follows:

(1) The various items of material or equipment to be evaluated are selected;

(2) Funds necessary for the analysis are estimated and procured. At Du Pont, this money may come from general funds or from individual department budgets. General funds cover commodities that have a broad utilization.

(3) The test method is decided upon, based upon the information desired. In some cases, this requires the design of a test apparatus; in other cases, statistical analysis is indicated, and assistance from the statistical department is requested.

(4) The items for comparative appraisal are purchased, and the test is scheduled.

Quotations are critically reviewed. Purchasing and account payable records of previous purchases of the item tested are also reviewed.

The "price spread" between the highest and the lowest quotations for similar items is considered.

Value analysis is performed in an appraisal "workshop," either with or without comparative testing.

"The workshop can be described as a shopping tour," Campbell reported. Comments and ratings are based on the individual's point of view, and an agreement is reached, from which "quality ratings" are given the competitive items.

Physical testing is held to a minimum. But when phsysical data is required, comparative testing is conducted prior to convening the workshop.

Then the price comes into the picture, and the recommended "best value" is established.

The results of each value analysis workshop must be widely reported to all departments concerned.

This, Du Pont feels, is the key to the success of the program. The results must reach the right point of application, and they must be accepted with the greatest confidence.

Suppliers are told, upon completion of the evaluation, the pros and the cons of their equipment, on an informal basis. But they are not told the rating of their equipment in relation to their competitors'.

Value analysis at Du Pont has proven its worth both in the selection of better equipment, and in the purchasing of less costly equipment of equal quality.

Du Pont cites the case where a $2,500 meter was selected where previously a $5,000 meter had been used. In another case, substitution of one positive displacement meter for another increased downstream equipment efficiency by 50%.

A certain temperature gage, of which some 3,000 are used annually, is now purchased by Du Pont at $15 less apiece. And tests on pneumatic tube fittings for instruments resulted in a 20¢ saving on the average; 70,000 such fittings are used annually at Du Pont.

HOW DO YOU MEASURE ENGINEERING EXPERIENCE?

Graduate degrees, professional licenses and society memberships are important to an engineering company. The actual accomplishments of the men who earned such honors are even more important.

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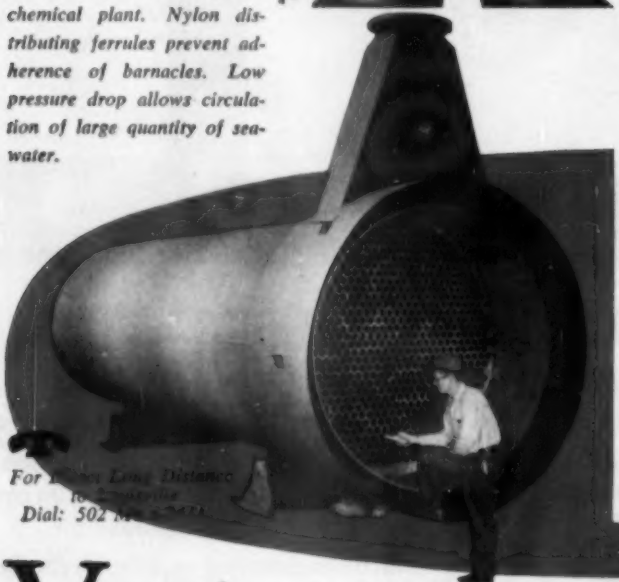
*One of the many distributor types developed for various applications.**

**Covered by Pat. Nos. 2,037,597, 2,424,441 and others pending.*

TOP: *Muddy well water is the coolant for these Jacket Water Coolers.*

RIGHT: *Two 56" Dia. x 12'0" high Amine Solution Coolers with expansion joints in shell.*

BOTTOM: *One of a number of seawater cycle units for a chemical plant. Nylon distributing ferrules prevent adherence of barnacles. Low pressure drop allows circulation of large quantity of seawater.*



Special metering distributors control the flow in vertical Vogt film type exchangers of single tube-pass design. The liquid is spread in a uniform film over the inside surface of the tubes. Since the liquid falls by gravity, good velocity is obtained with a small quantity of liquid.

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A unique feature of these exchangers is that the tube side can be cleaned while in operation.

Vogt Film Type Exchangers are used as Coolers, Condensers, Absorbers, Heaters, and Evaporators.

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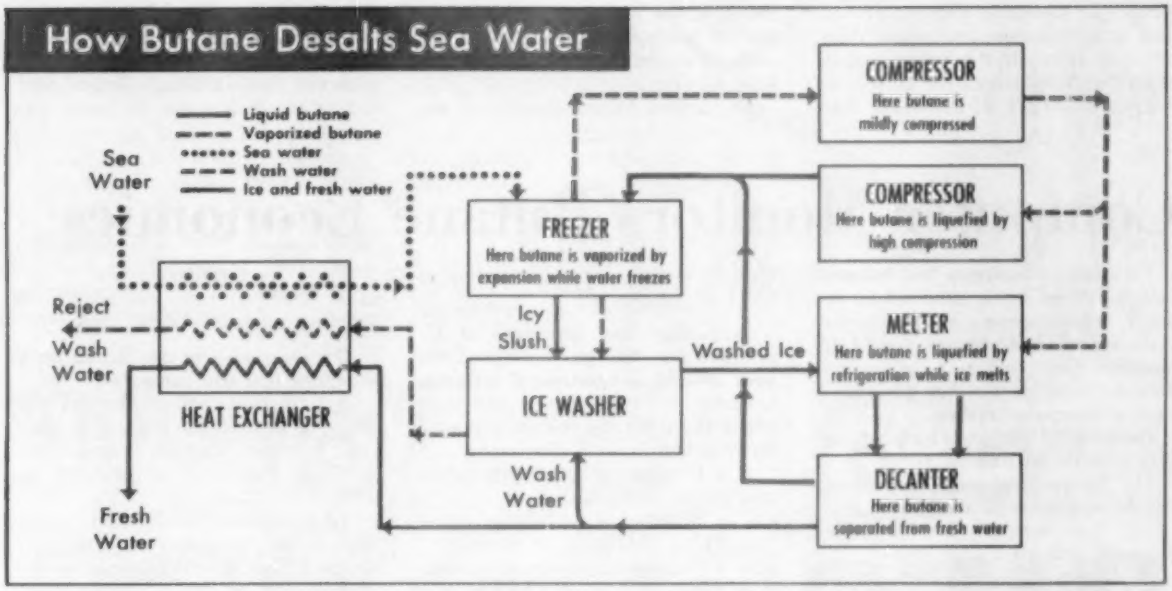


Butane Freezing Makes Seawater Potable

Good news for seashore refineries in the tropics: Butane—or isobutane—can be used to convert salt water to fresh water, in a closed-cycle freezing process with a high thermodynamic efficiency.

The process was described and evaluated at last week's meeting of the American Institute of Chemical Engineers, in Washington, D.C., by George Karnofsky, engineer of Blaw-Knox Co., Pittsburgh, Pa.

Karnofsky told the meeting that a pilot plant is currently operating on this principle in Japan, making eight long tons of desalted ice per hour from seawater.

The process takes advantage of the fact that butane boils at 31F—a temperature just below the freezing point of water.

Butane under pressure is brought into intimate contact with the salt water, at a pressure slightly below atmospheric. As the pressure on the butane is released, it boils off; its heat of vaporization is used to freeze the water into a "slush," from which the salt can be washed out.

The reverse process is used to melt the ice.

Mildly compressed butane, still in vapor state, is brought into contact with the ice. Its temperature, slightly above 32F, causes the ice to melt, and the heat absorbed by the melting ice, in turn, liquefies the butane.

It was found that 26 kwh.—or the equivalent in mechanical energy—are required to produce 1,000 gal. of unsalted water. This, Karnofsky said, is a very reasonable expense of energy. This is because of the direct heat transfer between butane and water, both in the freezing and the melting parts of the cycle.

The process has many proved advantages, but several problems still must be solved before it can be used commercially.

The advantages that have been established include:

- Crystals of ice formed in the slush are free of salt.
- Salt water can be washed from the icy slush with a minimum loss.
- Butane and water have enough density difference for gravity separation; the two products do not mix.
- The loss of butane is low.

But these factors need further study:

- Is normal butane or isobutane preferable for the process? Isobutane can be used at pressures closer to atmospheric, while n-butane needs a moderate vacuum; this factor favors use of isobutane. On the other hand, a small amount of butane hydrates is produced in the process, and these must be decomposed. N-butane hydrate can be decomposed at a temperature close to 32F, while isobutane hydrate has a higher decomposition temperature. This factor favors the use of n-butane.
- The most effective way of washing the ice has not yet been determined.

Blaw-Knox Co. has built a 35,000-gal.-per-day pilot plant for the Interior Dept.'s Office of Saline Water, at St. Petersburg, Fla., and is now starting experiments with two separate ice-washing methods: the Wiegandt system and Rotocel.

The Wiegandt system makes a sort of "leaky piston" of the ice, through which water is forced upward in a cylinder, to do the washing.

The Rotocel extractor is a separator extensively used in the chemical industry. Open-top cells move continuously in a closed horizontal circular path, conveying ice from a feed point around a circle to a discharge point. Ice is made at the feed point, with seawater and butane. It is fed into the cells, which are equipped with screened floors. Water is sprayed over the cells to wash the ice, in a countercurrent flow—that is, the wash-water closest to the discharge point is the freshest. At the discharge point, the screens of the cells fall open to release the ice, which is melted, in heat exchangers, into fresh water.

For a commercial plant, 5-million to 10-million gal. of fresh water per day could be produced at an attractive cost, according to Blaw-Knox.

The salinity of the water could be reduced economically from 30,000 ppm. of NaCl to 125 ppm. which is very satisfactory for potable water. About 10% of the weight of the ice is used as wash water.

And, says Karnofsky, if large, efficient compressors are available in the

refinery to compress the butane—so that decompression and evaporation can take place in the freezer—fresh water can be produced for as little as 30¢ per 1,000 gal. This is lower than the figure of 50¢ per 1,000 gal. considered generally acceptable for the artificial production of potable water from sea water.

Dr. Arthur Miller, director of the Office of Saline Water, predicts that many areas, even in the U.S., will soon desalt brackish water; this may be cheaper than drilling deeper and deeper for fresh water, he says.

Computer Monitors Butane Economics

The great importance that butanes and butylenes have assumed in today's refineries may justify the installation of a computer system to monitor their efficient utilization. Atlantic Refining Co. has developed such a computer system.

Butanes and butylenes have become very valuable to refiners, as:

(1) Octane boosters for gasoline, via the alkylation process; and

(2) Raw materials for the petrochemical industry.

And virtually every major process in a refinery will affect the volume, type, and ultimate disposition of the butanes produced.

H. C. Lester, Jr., one of Atlantic's engineers, described at the recent Tulsa (Okla.) conference of the Western Petroleum Refiners Assn. how Atlantic has monitored the judicious utilization of its C_4 products by computer calculation.

The computer is used to make an economic evaluation of refinery operations in terms of butanes.

A rigorous butane calculation made by hand, Atlantic says, would require over two man-days, because many factors have to be considered. The computer does this almost instantaneously.

The factors considered by the computer for its calculations are both of an economic and of a technical nature.

Among these factors are:

- The capacity of the refinery to store, sell, or purchase butanes.
- The seasonal variations in butane prices.
- The dollar value of the alkylate produced.
- The seasonal changes in vapor-pressure requirements of the gasolines produced.
- The relation between alkylation capacity and feedstocks available for such a process.

Operation of the cat cracker and severity of the cat reformer can then be adjusted.

The relative value of C_4 and other refinery products, according to market conditions, are evaluated by the computer, and the results of its calculations can be followed to reach the most economical type of operation in terms of butanes.

Production and inventory of C_4 products can thus be maintained the year around in economical balance.

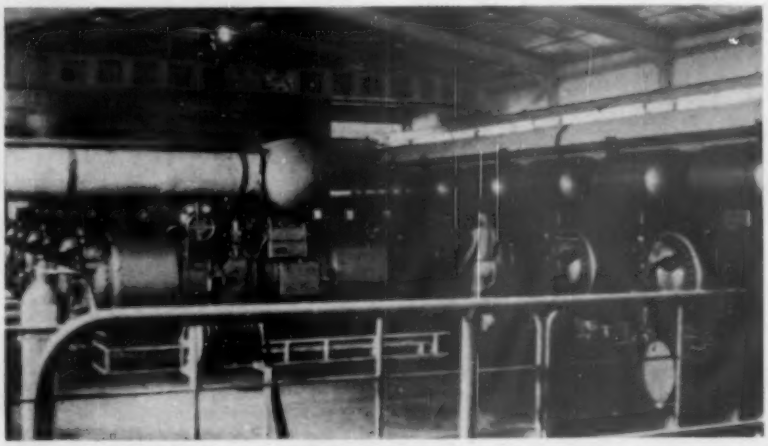
Lester reviewed a few typical cases where the computer calculations were instrumental in:

- Evening up butane production and butane purchases.
- Maintaining n-butane inventory within the limits of storage.
- Regulating isobutane production so as to have it available as a winter vapor-pressure component, without carrying excess inventory.
- Monitoring the variations in alkylate production.
- Demonstrating, when it became necessary, the advisability of building more alkylation capacity.

The program was developed on a standard IBM 650 computer.

A neat trick had to be devised, however, because the instructions that must be stored for such a program exceed the "memory" capacity of an IBM 650.

To circumvent the difficulty, Lester said, certain locations on the memory drum are used as temporary storage for instructions; as soon as these intructions are executed by the computer, new instructions are loaded into the same locations, thereby wiping out the original instructions.



GASIFIER ROOM contains 34 free-piston engines acting as gas generators, at Societe "Le Nickel," in Noumea, New Caledonia, one of the places where . . .

Free-Piston Engines Burn Resid

Free-piston engines that can use almost any locally available fuel oil are making rapid progress outside of the U.S., and interest in this type of "omnivorous" price mover is growing in this country also, according to M. Barthalon, chief engineer of the French company (SIGMA) that makes them and licenses them abroad.

General Motors Corp. is the nonexclusive licensee for the U.S.

One of the prototype installations is that of Imperial Chemical Industries, Ltd., in Wilton, England (PW —Jan.22'60,p45).

Over 80 free-piston engine installations are now in operation or under construction, totaling more than 500,000 hp., Barthalon told the American Society of Mechanical Engineers during its recent annual meeting in New York. These are located all over the world, and every sort of fuel is being used.

In the Noumea (New Caledonia)

plant, for example (picture, page 38), an 18-gravity residual fuel oil, with as much as 2.3% of sulfur, is burned.

The average consumption of this fuel, Barthalon reported, is 255 grams (0.56 lb.) per kwh. at the alternator terminals. In addition, lube oil consumption was found to be 2.2 grams per kwh.

Single-shaft units of up to 24,000 kw. have been designed, which lead to a marked reduction of building size, SIGMA says.

Each unit consists of two sections, the "gasifier section," where fuel is gasified and compressed, and the turbogenerator section, where the gases thus produced drive a gas turbine. By controlling the gasifier section through remote control—a recent development—the operating staff can be reduced to only two men.

These units can be installed in the U.S. for as little as $110 per kw. of capacity, including building and all electrical equipment, SIGMA says.

What's New / IN PROCESSING

Tennessee Oil Refining Co., division of Tennessee Gas Transmission Co., will install its first aromatics production facilities at its Chalmette (La.) refinery.

Benzene, ethylbenzene, mixed xylenes, orthoxylene, and toluene will be produced.

Bechtel Corp. will build the 6,000 b/d cat reformer and the 22-million-lb.-per-year orthoxylene fractionation unit. Badger Mfg. Co. has been awarded the contracts for the construction of the 20-million-lb.-per-year ethylbenzene fractionator, and for the 2,200 b/d benzene, toluene, and xylenes extraction unit.

Completion is expected in mid-1961.

•

A 5,000 b/d hydrogenation unit for treating lubricating oils and transformer oils will be built by Shell Oil Co. at its Martinez (Calif.) refinery.

The unit removes sulfur and impurities from low- and medium-viscosity-index industrial oils.

The Martinez hydrotreater is Shell's second; its finished products will be used as base stocks at several Shell refineries and blending plants, including Martinez. Its construction will begin early in 1961; completion is expected by summer.

•

The first asphalt plant in the Dakotas will be built by Great Western Refining Co., as part of its remodeling of a Dickinson (N. D.) refinery formerly owned by Queen City Refining Co. Great Western, formerly known as Great Plains Refining Co., plans to spend about $1.5-million on the entire program.

The new facilities will also include an 800 b/d platformer, and a desalter, as well as more crude tankage.

Products will be premium gasoline, diesel fuel, jet fuel, industrial fuel, and asphalt.

•

British American Oil Co., Ltd., has placed its first dry-desiccant-type gas processing plant on stream near Gilby, in central Alberta. B-A has already delivered gas for customers to the Alberta Gas Trunk Line.

The plant was designed to supply a maximum of 15-million cf/d of gas at 850 psi. and 80F. Stabilized condensate to be recovered from capacity operations will be 210 b/d.

The Gilby plant is a three-tower adsorption unit with a condensate stabilizer column and open refrigeration circuit. Black, Sivalls, Bryson, Ltd., was the contractor.

•

The Oronite Division of California Chemical Co., has developed an ashless detergent additive specifically designed for gasoline engines operating under low-temperature, stop-and-go conditions.

It is being offered alone as Oronite 1200 Series, which incorporates a zinc-phosphorus-containing oxidation inhibitor.

The 1200 Series additives, the division says, provide good high-temperature gasoline and diesel engine performance.

Oronite adds that oils with the new additives offer better control of engine combustion phenomena, lower octane requirement increase, and reduced surface ignition tendencies, because of the lower ash content.

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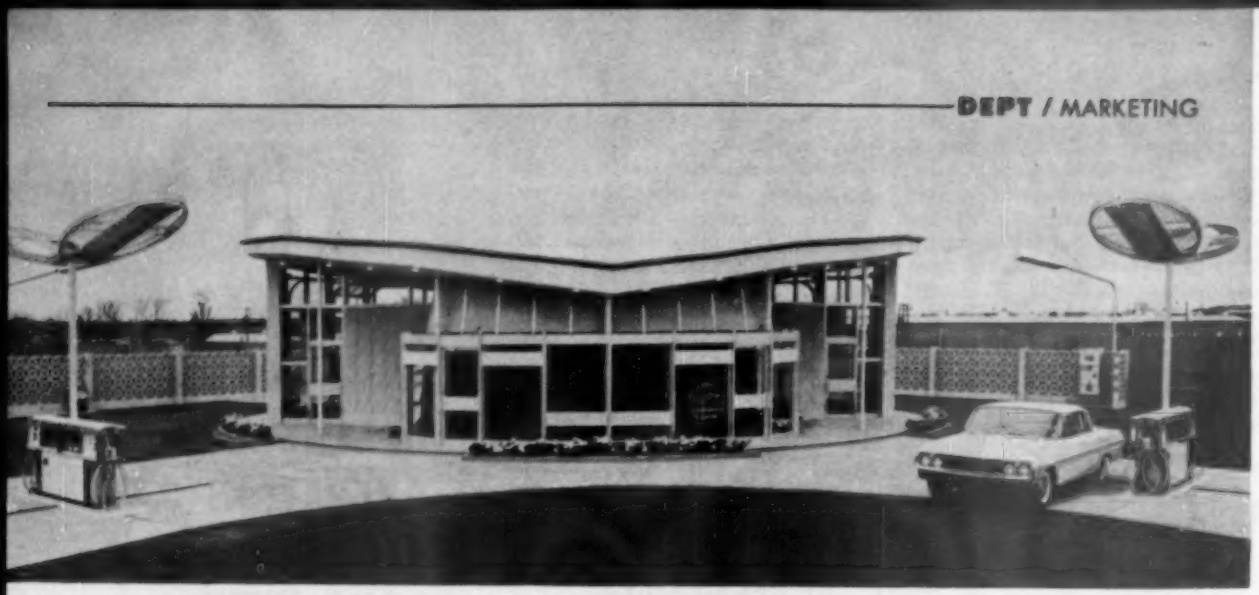
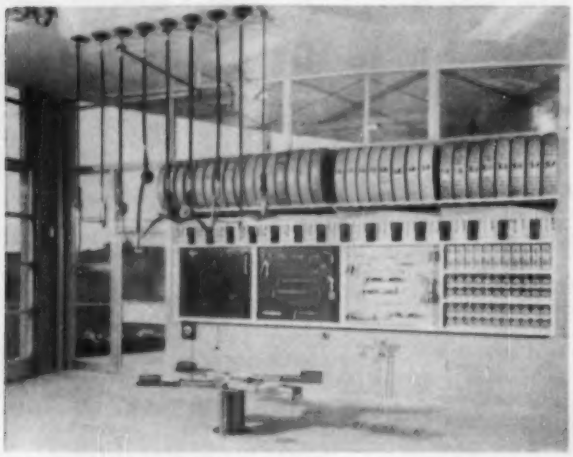
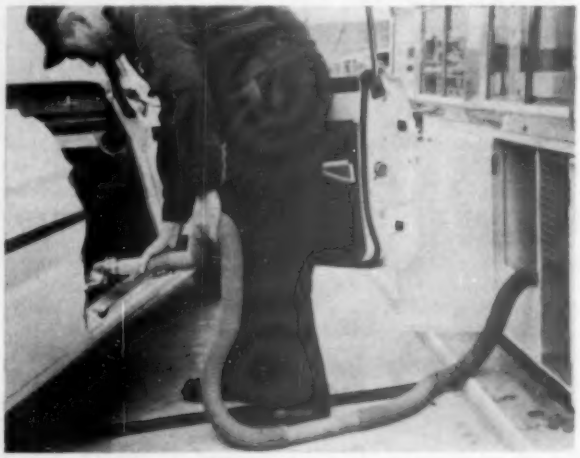


A CIRCULAR DESIGN AND A WING-LIKE ROOF are the trademarks of the station exterior. A new lighting fixture echoes the roof line. Inside are 2,300 sq. ft. of floor space, a sales room, four bays, a storage enclosure, and a mechanical equipment room.



THE SERVICE BAYS are organized for efficiency and cleanliness. A complete lubricating system reaches down from above.



A VACUUM CLEANER that snakes out of the pump island is a detail apparently adopted from private-brand marketers.

DX Sunray Unveils an "Ideal" Station

Oil marketers have an opportunity this week to find out how one major —DX Sunray Oil Co.—believes a service station should be designed.

This expanding Midwest marketer has just opened a thoroughly modern station in Tulsa that represents two years of company planning and the influence of French architectural thinking.

In this station, "we are attempting to embody design concepts that consumer research has indicated will please the customer—not the engineer," S. D. Breitweiser, president, told PETROLEUM WEEK.

The station also represents advanced thinking in functional architecture, and the use of material, color, and light to enhance appearance.

The most striking feature of the prototype station is its shape—round.

The salesroom, lube bays, storage racks, and pump islands radiate from a central point affording the dealer (whose desk is in the center) full visual supervision of his station.

"We believe the circular station to be as nearly ideal a design as we can now envision. It is adaptable to any lot size and any location, simply by expanding or contracting the perimeter," says Breitweiser. "This factor perpetuates a continuity of design for easy customer identification."

Breitweiser also believes the adaptable circular plan will retard station obsolescence, which, he believes, now limits average station life to 15 years.

Another unusual feature is a wing-like roof that glitters with inlaid marble chips.

This roof typifies that approach of Alex Notoras, the architecture instructor from Oklahoma State University who was called in by DX for a "fresh approach to station design."

To achieve his striking roof line, Notoras (who studied in Paris at the Beaux Art Institute) turned to a central post from which he could radiate web joists. To accentuate this roof line even more, Notoras varied the thickness of the eaves.

The floating effect of the roof was created by surrounding the work area of the station with a concrete block wall and extending glass up to the ceiling.

A COMPACT SALES ISLAND carries through the emphasis on economy of space and cleanliness. The intention here is to "motivate" and "organize" the impulse to buy.

The station's sales room keynotes DX Sunray's intentions of providing "comfort and convenience for both the customer and the employee."

The motorist who may be waiting for his car to be lubricated may lounge in a sofa and watch television or leaf through magazines at a coffee-table. From the salesroom, he—like the dealer—is offered an unobstructed view of the service bays.

To direct the motorist's attention to TBA are shelves of product displays. (These shelves are visible from the pump island.)

The attention to color is typified by the choice of shades of ceramic tiles in the restrooms: Feminine peach and, for men, blue. A dressing table and wrap-around mirrors are featured in the ladies' restroom.

Frame lifts of polished cadmium plate and overhead lubricating systems are highlights of the two service bays.

The overhead installation "eliminates wasted space and messy housekeeping problems," the company explains.

The supply source for this system—including motor oil, lubes, transmission fluid, water, air, and gear grease—is located in a mechanical equipment room.

In twin wash bays—located opposite the two lube bays—the emphasis is again on economy of space and housekeeping. Overhead dispensing systems are also installed here, offering water, motor cleaning solvent, and water-detergent.

Outside the station, DX Sunray has built pump islands that it calls "sales islands in themselves."

"Here all of the equipment, manpower, services, and display of merchandise is integrated into a single unit," the company says.

Contained in this single unit are gasoline pumps, oil displays, tools for windshield and battery service, a vacuum, an air pump, and water dispenser.

A novel detail is the magnetized pump nozzle that holds the motorist's gasoline cap while his car is being serviced. The pump nozzles are gold-plated.

The pump-island unit was specially built for DX Sunray by the Bennett Pump division of John Wood Co. It is the first application of Bennett's modular concept of integrating pump-island services into one flexible housing.

DX Sunray believes that such a design encourages pump-island cleanliness and motivates and organizes "the creation of willingness on the part of the consumer to buy."

A perimeter fence—constructed of pierced concrete blocks—disguises the entrances to the lube bays, which are located on the opposite side of the station.

At each end of the fence, the company has placed a soft-drink vending machine, and at one end a telephone booth. Further softening the exterior impression of the station are three planters that "picture-frame" the salesroom.

"Although we have researched all phases of consumer preferences, we are the first to admit that the new station may not be the answer we want," the company says.

"This station is strictly a sidewall affair," says Breitweiser. "Obviously, its cost is much greater than we anticipate for future stations."

What's New
IN MARKETING

The California Petroleum Marketers Council has postponed its decision to act against the pricing tactics of Shell Oil Co. in California (PW—Dec.2'60,p67).

These tactics reportedly involved pricing to within one cent of private-brand prices in certain parts of the state. Earlier, CPMC had found these tactics to be "unjust." But now the Council hints that the one-cent phenomenon has waned.

So instead of complaining to the Federal Trade Commission (which had been talked of as a possible counter move), the Council has set up a watchdog committee to report any resurgence of one-cent differentials.

•

When Rep. James Roosevelt (D., Calif.) reintroduces his TBA bills next year, he will not have the full support of his small business subcommittee. This may seriously weaken their chances for passage in the House of Representatives.

The lack of support apparently motivated Rep. Wright Patman (D., Tex.) last week to order Roosevelt and Rep. William Avery (R., Kan.) to write an interim report on the subcommittee's oil marketing investigations conducted earlier this year.

Such a report would clearly not convey all of Roosevelt's criticisms of major oil marketers, since Avery has been opposed to Roosevelt's interpretations of dealer-supplier relations.

•

Shell Oil Co. of Canada, Ltd. will sponsor the world's longest gasoline economy run next spring.

The run will take competing drivers 3,000 mi., from Montreal to Vancouver, where they will finish at the British Columbia International Trade Fair.

•

In Hungary, engineers have invented an instrument that may help lengthen motor oil change intervals.

The instrument roughly measures the contamination of crankcase oil by comparing its color with unused oil.

The Hungarian engineers believe that by checking oil color regularly they can reduce the high proportion (70%) of oil changes that occur before the efficiency of the oil is impaired.

Italians Cooling on Persian Gulf?

Enrico Mattei's ENI is reported thinking of calling it quits on the offshore acreage it won in Iran's Persian Gulf waters in 1957.

At the time, the 2,162-sq.-mi. block —which extends out to the Kuwait offshore acreage just won by Shell— was regarded as the plum of Iran's offerings of new oil rights.

Italy's state-owned ENI group won it, along with two other tracts, under a 50-50 partnership with National Iranian Oil Co. The move gave Mattei his first tochold in a major Middle East oil area, under the first of his so-called "75-25" deals, in which ENI bears all exploratory risk unless commercial production is established.

ENI is now said to be discouraged by results of its offshore drilling so far, and by lack of more promising structures to drill.

Actually, ENI did find oil in its first wildcat, drilled in a northern corner about 15 mi. from the Iranian coast. At one point, Mattei himself told PETROLEUM WEEK that the well would make a 3,500 b/d producer (PW—Oct.14'60,p48). Subsequent testing, however, apparently failed to establish it as a commercial discovery.

At present, ENI is drilling a deviated hole on the same structure from its fixed platform, but apparently without much hope of better results.

Earlier, ENI was expected to drill a third offshore test on a different structure, but there has been no indication whether it has selected a location. Further, industry sources say, disappointingly few promising structures were found by seismic work done before drilling was started on the tract.

ENI therefore is considering possible surrender of the block, which lies between the two offshore tracts Pan American International holds, also jointly with NIOC.

Under its pact with NIOC, ENI is obligated to spend a total of $6-million in the first four-year exploration period, ending September, 1961, on the three tracts they hold jointly (PW—Sep.20'57,p48).

ENI could withdraw from all of the tracts at that time, on payment of half of any unspent balance. It presumably could pull out of any one of them even before then, by making up the total expenditure commitment on the others.

At this stage, ENI is preparing for an onshore wildcat on Iran's southeast coast, the first on its 2,316-sq.-mi. tract along the Gulf of Oman.

At the same time, it is drilling ahead in the initial test on its inland onshore tract, a 4,362-sq.-mi. block in the Zagros Mountains.

Link Says Brazilian Oil Prospects Bleak

(A Report from PETROLEUM WEEK'S Rio de Janeiro Bureau)

RIO DE JANEIRO—Brazil's state oil monopoly, Petrobras, is apparently on a dead-end street in its search for new oil fields. That's the conclusion of Walter Link, Petrobras chief of exploration.

Link has just turned in a report on Petrobras' six-year oil exploration push in which he expressed pessimism over the exploration outlook.

Outside of the Bahian region, where oil was discovered 20 years ago, no sedimentary basin has been found to have petroleum on a commercial scale.

Petrobras has explored four different basins in the past six years, but only in the Bahia Reconcavo has new commercial production been found.

Because of the lack of exploration success, the ultranationalists here are seeking a scapegoat—and they think they have found him in Link, former chief geologist for Jersey Standard.

Link went to Brazil six years ago to head up Petrobras' exploration program. His contract for the $100,000 per year job expires this month.

What has raised the nationalists' ire is not only Link's pessimism, but his recommendation that the search be curtailed.

The conclusions were a bitter pill to the nationalists. They were sure that once the exploration job was given to a national agency and foreign capital barred, oil would be discovered in abundance throughout the country.

Brazil has been undergoing rapid industrialization with mounting oil needs and is now spending $250-million to $300-million annually for oil imports.

To help provide for her demand, the country is pushing production of the Bahian fields to a point where depletion may come sooner than Brazilians would like to think.

The implication of the nationalists is that Link has tried to sabotage Brazil's monopolistic oil policy—a charge Link vigorously denies.

Recently Gabriel Passos, the nationalists' No. 1 spokesman, took the floor of the Federal Chamber of Deputies and charged, among other things, that Link was serving as a vice-president of Jersey Standard, in addition to his job with Petrobras. The inference was that Link had directed the oil search to the wrong places.

In his first newspaper interview since taking the Petrobras job six years ago, Link shot back that he had had no contacts whatsoever with Jersey personnel since joining Petrobras.

The dispute can cause plenty of trouble for President-elect Janio Quadros, who takes office Jan. 31.

Quadros will then have to make a tough decision: whether to continue the costly search, or make a drastic cutback and face the certain ire of the nationalists.

Quadros may come under strong pressure from the ultranationalists to name one of their number to Petrobras' presidency. Some sources here claim this is the ultimate aim of the whole present nationalists' campaign.

Meanwhile, there is a movement afoot to extend Petrobras' already extensive sway over Brazil's oil industry.

Recently, nationalist deputies announced they would get busy writing legislation to:

- Make Petrobras Brazil's sole importer of oil products, which it could resell to distributors.
- Prepare the way for the government to take over and transfer to Petrobras Brazil's private refineries.

Perez Oil Policies May Face Test

(From PETROLEUM WEEK'S *Caracas Bureau)*

CARACAS—Oil Minister Juan Perez Alfonzo put a flexible interpretation on his production program for Venezuela last week amid signs that his policies were headed for a severe test.

Returning to an earlier position, Perez said he might allow an annual crude production increment of as much as 6%—as compared with the 4% limit he has mentioned in recent months.

He also recalled and reiterated an earlier statement that the increment could exceed 6%—"in an emergency."

The upward revision in production limits is strictly theoretical at present, since output is actually limited by Perez's sales discount curbs.

But the fact that Perez is revising them at this time may be a straw in the wind.

New production limits would only become significant if oil companies were in a position to sell more crude by meeting price competition. Perez, however, still insists that Venezuela cannot attempt to meet cut-price competition.

The oil industry, meanwhile, prepared to outline its situation in an exposition before the National Economy Council.

The council, an official government economic policy advisory body, had asked the Petroleum Industry Chamber to answer a questionnaire on effects of official policy on the industry —and what would happen if policy were changed (PW—Dec.9'60,p35).

Instead of submitting a written reply, it was decided that an oral reply would be made by Creole director Carlos Lander, the oil industry representative in the Economy Council.

Meanwhile, there were hints here that Perez was getting little cooperation from the Middle East in his bold bid for an international system of price regulation and/or production control through OPEC, the Organization of Petroleum Exporting Countries formed with Saudi Arabia, Iraq, Iran, and Kuwait.

Perez unilaterally imposed limitations on crude sales discounts by Venezuelan companies—apparently in the hope that other producing areas would follow Venezuela's example.

Oil companies here report they are losing sales regularly—because they cannot compete pricewise under Perez's discount regulations.

Now the Oil Ministry has sent out a circular to companies, asking for details on what sales they have lost, at what prices, and to whom.

The circular said that the information was to be used in applying the OPEC agreement.

Loss of markets would cut the ground out from under Perez's sales discount regulations—unless he is able to get some concrete agreement from other OPEC members on international controls on production or prices at the meeting scheduled in Caracas Jan. 15.

Perez's laconic reply to a question at a conference sounded like an admission that there is little prospect of such an agreement.

"It is possible that it will not be necessary to apply a system of international prorationing," Perez replied when asked whether OPEC members were drafting such proposals for discussion at the meeting.

Venezuela, Perez said, "has a system of its own, which it is applying here."

Applied unilaterally, Perez's discount rules are an invitation to other producing nations to walk away with Venezuela's markets, as some observers see it.

And as one oilman noted, "If you lose a market because someone offered a bigger discount, you can only get it back by offering a still bigger discount than he did."

A direct test may be near on whether the Oil Ministry has the authority to halt shipments of crude sold at discounts over its announced limits.

The possibility is indicated that oil companies may test their right to ship oil at whatever price they are able to get.

Few, if any, oil companies are observing the 5% discount limit that Perez announced following the creation of OPEC at Baghdad.

Now, in fact, they are straining his earlier 10% limit. The 10%—which provided for some exceptions in case of traditional markets—was communicated orally to companies by Ministry officials last September. It was never put in writing.

Later, encouraged by the Baghdad conference, Perez publicly lowered the limit to a flat 5%—and set a year-end deadline for compliance. This 5% limit has never been officially communicated to the oil companies—orally or otherwise.

India Gets Down to Oil Terms

NEW DELHI—The Indian government prefers a 60-40 profits-split provision in exploration agreements, but will settle for a 50-50 split on certain conditions, it was understood here.

Reports in New Delhi indicate Indian oil officials have more or less solidified their policy towards foreign oil companies seeking exploration rights.

As to the profits sharing, it is understood the government will consider each application on its merit and agree to a 50-50 arrangement if the terms offered by an oil company are otherwise good.

However, it is balking at some companies' insistence that they receive refining rights too.

The government has on hand firm applications from six oil companies, as well as expressions of interests from several other firms.

American firms that have filed for rights are Esso Standard Eastern, a new Jersey Standard affiliate that will take over Stanvac's operations in India (PW—Nov.25 '60,p31), Kerr-McGee, and Continental. Esso is interested in acreage in Rajasthan, northwest India, for which Stanvac recently applied.

Reports in India that Esso Standard Eastern may offer 40% of share capital in a new exploration company to the Indian public were vigorously denied in the U.S. by Stanvac.

In addition, Shell and the British-owned Burmah Oil Co. have filed applications for rights in Assam.

With the exception of the Italian state firm, ENI, the applications have indicated they do not want capital participation by the Indian government.

ENI, which seeks acreage in Assam, is reportedly following its usual pattern by offering the government a 50% participation.

What's New / AROUND THE WORLD

U.S. Firms to Drill North Chile Tests

CHILE—The first wildcatting in northern Chile will be started in January by Loffland Brothers and Santa Fe Drilling Co., under separate drilling contracts from ENAP, Chile's state oil company.

Loffland's contract covers two or three 9,000-ft. to 10,000-ft. tests in the Salar de Pintados area of Tarapaca province. Santa Fe's is for six or seven 6,000-ft. tests in Atacama province, in the Salar de Pedernales area.

At present, ENAP is producing about 22,000 b/d from its fields in the extreme south, in Chile's part of Tierra del Fuego island.

Five producers have also been completed at Daniel, a new field on the mainland proper, which ENAP hopes will add another 4,000 to 5,000 b/d to its output by mid-1961 on completion of a pipeline tying into its new marine terminal at Gregorio.

•

RHODESIA—Another American firm, Bardahl International Oil Corp., has entered the marketing picture here. The company is a marketer of specialty products and greases. It will sell here under its own brand name.

•

URUGUAY—The government, lacking money, equipment and know-how for more extensive oil exploration on its own, will soon invite foreign firms to bid for exploration contracts.

The Ministry of Industry is expected to announce shortly details of conditions and tenders.

However, Uruguay will not abandon its own efforts, undertaken through the state monopoly, Ancap.

•

UNITED KINGDOM—Mobil plans to add a 15,000 b/d crude topping unit to its Coryton refinery, near London.

The unit, designed to process low sulfur crude, will be constructed by the Kellogg International Corp. It is expected to go on stream early in 1962.

•

INDIA—India will not permit Burmah-Shell to expand its existing refinery at Bombay.

The company last year requested permission to add one million tons annual capacity to the plant at a cost of $22.4-million. But the government appears to have decided to restrict all future refining plans to the state.

•

LIBYA—Esso Syrte and Libyan-American have a 500-800 b/d discovery—first on their Block 20. The well, the No. 1 Raguba, tested 42-gravity oil recently from 105-ft. of net porous section. The first drillstem test was made at 5,300 ft.

Esso Syrte, operator, holds a 50% interest in the block, while Libyan-American, a subsidiary of Texas Gulf Producing Co., has 25.5%. The remainder is held by W. R. Grace & Co.

•

NIGERIA—Mobil has abandoned its No. 1 Ojo wildcat, the second test it has drilled in this country, after drilling to 6,326 ft.

Last year, Mobil drilled a stratigraphic test on another structure. The firm has some 4,000 sq. mi. of exploration acreage in the extreme west of Nigeria.

•

NEW ZEALAND—Marsden Point in North Auckland has been chosen as the most suitable site for a 40,000 b/d industry refinery.

Participating firms include Shell, British Petroleum, Caltex, and Mobil. Forty percent of the share capital of the refining firm is being offered to the New Zealand public.

•

PORTUGUESE GUINEA—Esso is ready to spud its second wildcat here, after abandoning its first test recently at 3,244 ft.

The second test, called Co, will be approximately 20 mi. west of the first wildcat, which was near Joao Landim. Esso holds rights to the whole province of Bissau.

•

EGYPT—The Egyptian-owned Petroleum Cooperative Society has increased its share of local distribution to 40% of Egypt's consumption, according to The Arab Review, a government publication. Its total is now 1½-million tons, up from 1-million in 1957 and only 70,000 in 1951. It operates 132 filling stations and also has a stake in COPE, the 49% Egyptian-owned producing company in Sinai. (The other 51% is largely owned by Petrofina and Italy's ENI.)

•

IRAQ—Arab League oil official Mohammed Salman has been appointed as Iraq's Oil Minister. Salman, an Iraqi, had been offered the post months ago. He accepted it this week and tendered his resignation as director of the Cairo-based Arab League's department, which he helped establish in 1954 and has headed since then.

Shell, Kuwait Haggle on Bonus, Shares

KUWAIT—Shell and Kuwait are haggling over two points in their offshore exploration agreement, according to a Kuwaiti source.

The two parties have already signed heads of agreement, under which Shell will pay a bonus of $84-million for exploration rights in the Persian Gulf.

The form of the bonus payment is one item in dispute.

Shell wants to pay in resident sterling for investment in the sterling area, like the rest of huge balances Kuwait maintains in the Bank of England. The Ruler of Kuwait insists payment be made in transferable sterling, which he can use anywhere.

Also, there is a dispute over the form of local participation.

The Ruler is asking for outright participation by the newly formed National Petroleum Co. Shell wants to avoid such a precedent: It prefers an agreement like the Iraq Petroleum Co.'s 1952 pact with Iraq, which could acquire share participation, but only in case of a future capital increase.

Investigate how bulk delivery of Tenamene additives can cut your gum inhibitor costs

Eastman's bulk handling system for Tenamene additives saves refiners a substantial amount of money.

In the case of Tenamene 2, the savings on a 36,000 pound tank car amounts to $2,160.

Smaller, but appreciable, savings can be realized through tank truck delivery, with the added advantage of 3-compartment shipment—permitting you to obtain in one delivery up to three Tenamene additives at a bulk shipment price.

Of course, not everyone can benefit from Eastman's bulk handling service. It's practical only for refiners whose inhibitor requirements justify modification or replacement of existing drum handling and storage facilities.

To help you evaluate the economics of a bulk handling system in your refinery operation, we have prepared a comprehensive engineering report that describes the fittings, transfer lines, storage installations and procedures required.

Your Eastman representative will be glad to demonstrate how a switch to bulk purchases of Tenamene additives can cut costs for you. Call him or write to EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

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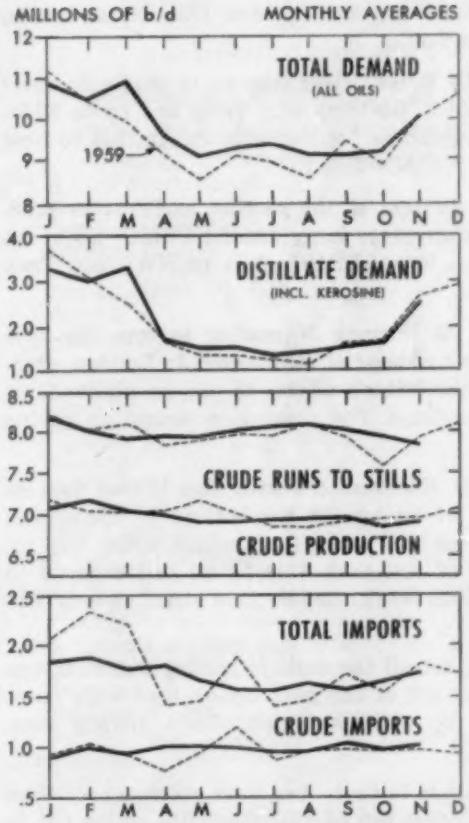
PETROLEUM WEEK'S

Fingertip Figures



Figures for period ended Dec. 9, except as noted

TOTAL DEMAND

Latest 4-week average	10.404
Year ago	10.610

DISTILLATE DEMAND

Latest 4-week average	2.827
Year ago	2.962

RUNS TO STILLS

Latest week	7.887
Previous week	7.834
Year ago	7.975

CRUDE PRODUCTION

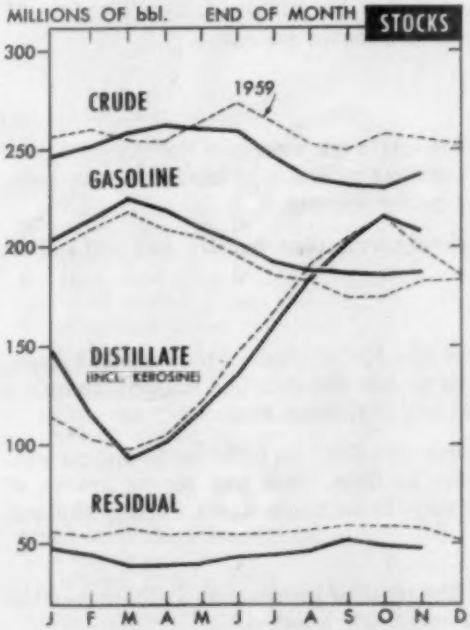
Latest week	7.152
Previous week	6.984
Year ago	7.123

TOTAL IMPORTS

Latest week	1.942
Previous week	1.703
Year ago	1.753

CRUDE IMPORTS

Latest week	1.137
Previous week	.900
Year ago	.911



CRUDE STOCKS

Week-ended Dec. 5	238.3
Previous week	236.8
Year ago	252.6

GASOLINE

Latest week	187.1
Previous week	187.2
Year ago	181.3

DISTILLATES

Latest week	202.4
Previous week	209.5
Year ago	189.5

RESIDUAL

Latest week	48.8
Previous week	49.3
Year ago	53.9

Fuel oil marketers have a three-month start over a year ago. The freezing weather—which didn't come last distillate season until March—is firming up prices.

Perhaps nobody except farmers is as dependent as heating oil marketers on the whims of the weather.

When a cold snap hits, heavy demand coupled with slow deliveries can be expected to put a premium on burning oil prices.

This is the way the wind blows: Esso Standard has just advanced posted prices for distillates in the East and along the Gulf Coast. Most majors and independents are expected to follow the move.

Here are some of the price hikes at key points:

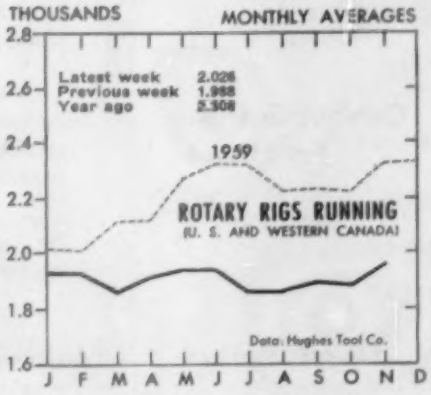
- New York Harbor: kerosine and distillate prices are up 0.6¢ a gal.
- Baton Rouge and New Orleans: prices up 0.3¢ a gal.
- Providence, Boston, and Portland: net increases of 1.1¢ and 1.2¢ a gal.

Last week brought the first substantial drawdown in distillates stocks since the beginning of the current heating season.

Fuel oil inventories dropped by 7.2-million bbl. They had decreased slightly more than 3-million bbl. the previous week, but had risen contraseasonally the week before that.

Another two weeks of such heavy withdrawals will bring fuel oil stocks more than 1-million bbl. under the year-ago level.

Despite some improvement last week, distillates demand is still averaging below last year's. Demand for the latest four-week period averaged 2,827,000 b/d, or 135,000 b/d under 1959—due chiefly to the fact that demand at the primary level lags behind consumer markets.



The Market Trend

For Tankers: Maybe the Slump is History

This week everybody's in the market for a tanker voyage. In London, Shell, BP, and Esso Petroleum were picking up charters for Persian Gulf to UK/Continent. Even the French showed up, and they haven't been active charterers for almost four years.

And tanker rates have finally fought their way up to profitable operating levels. Clean Gulf-to-North of Hatteras spot rates are up to $3.28 a ton (USMC+15%). Foreign-flag dirties for Netherlands Antilles to New York bumped up to $2.06 a ton (USMC—25%).

This is a far cry from the bottom of the market earlier this year. Last summer, clean U.S.-flag tanker rates hung around USMC—25%. At that time, too, foreign dirties hit a low of USMC—60% on NWI-New York hauls.

There was steady demand all through November to gun the rate increases, and early December saw a surge of chartering. In London, shipowners broke the charterers in the latter's efforts to pay no higher than USMC—60% for Persian Gulf loadings. The charterers wound up paying the equivalent of USMC—45%.

One remarkable thing about this season's rate rise is that lots of vessels have been sneaking out of lay-up. At the bottom of the slump, about September, 1959, there were 476 tankers (8-million tons) tied up for lack of cargoes. By the end of last year, this figure had dropped to 386 tankers (6.3-million tons). This week the idle fleet stood at only 228 vessels (3.5-million tons).

Fortunately for the market, not all the tankers coming out of lay-up have returned to oil service. Over 100 of the peak lay-up fleet were obsolete, and many of these wound up with the shipbreakers. Others were converted by dry-cargo carriers.

The slump just behind us—if it is past—has been more severe than that of the 1930s. From a Suez crisis top of USMC+200%, rates fell to a bottom of USMC—80% for foreign-flag dirty tankers. That's a drop of over 90%—something owners hope they never see again.

Power Stations Want Tankers:

The most unusual tanker charterers last week were two Norwegian power stations. Lack of rainfall this year has caused a hydroelectric shortage, and tankers can fill the gap as power sources.

Four tankers have been taken on short-term timecharters, and will supply about 18,000 kw.

Combat Gasoline For Europe:

Bids to supply combat gasoline for the NATO pipeline at Donges, France, usually are about as competitive as you can get. The reason: There's a perennial surplus of gasoline in the Caribbean area.

The apparent low bidder this month was Gulf, at 6.93¢ on 50-million gal., delivered to Donges from Puerto La Cruz. Shell was second lowest, at 6.98¢ on 25.2-million gal., delivery to be made from Pernis, Holland.

LP-gas Posted:

An initial posting for propane at the pipeline terminal at Todhunter, Ohio, was made last week. The price was 7.55¢ a gal.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of December 12

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....12.25-13.25
- Gasoline, 92 oct reg....11.25-11.5
- Kerosine....9-10
- Heating oil, No. 2....8.25-9
- **Gas oil, 48-52, d.i.....8.5-9†**
- Fuel oil, bunker "C"....$2.30

Caribbean, cargoes
- Avgas, Grade 100/130....14.75
- Gasoline, 93 oct research prem....11
- Gasoline, 87 oct research reg....10.125
- Gasoline, 80 oct research....9.375
- Gasoline, 70-72 oct motor method....9.25
- Kerosine....9.25
- Heating oil, No. 2....8.125
- Gas oil, 48-52 d.i....8.375
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- Kerosine....9.8-10.05
- Heating oil, No. 2....8.8-9.05
- Fuel oil, No. 6....$2.62

Okla.-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg....12.5-13.25
- **Kerosine....10.5-11†**
- **Heating oil, No. 2....9.25†-9.75†**
- Fuel oil, No. 6....$1.80-1.90

Chicago, bulk
- Gasoline, 92 oct reg....12.625
- Heating oil, No. 2....9.75-11.35
- Fuel oil, No. 6 high sulfur....7.65

Los Angeles, rack
- Gasoline, 88 oct reg....11-12.65
- Diesel fuel, PS 200....7.75-11.25
- Light fuel, PS 300....$2.90
- Heavy fuel, PS 400....$2.05-2.45

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....4.5-5
- Propane, Baton Rouge....5.625

Pennsylvania Lubes
- Bright stock, 25 p.t....25
- 200 vis. neutral, 25 p.t....28

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....26-27
- Neutral, solvent, 200-210 vis....23-24

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....26
- Neutral, solvent, 200 vis....23

Eastern Hemisphere

Singapore (Pulau Bukom) cargoes
- Avgas, grade 100/130....15.5
- Gasoline, 79 oct research....9.125
- Kerosine....9.625
- Gas oil, 48 d.i. minimum....8.75

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9....$2.69-2.97
- North Dakota, 36.0-36.9....2.47-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N.M., inter., 36.0-36.9....2.93
  - West Texas, N.M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.05-3.25
  - Mirando, 28.0-28.9....2.96-3.31
- Illinois Basin, flat....3.00-3.05
- Pennsylvania Grade, Bradford dist., flat....4.80
- California, Signal Hill, 21.0-21.9....2.33†
- North Louisiana-Arkansas, 36.0-36.9....2.72-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.)....$2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.425
- Virden (Man.)....2.285

Venezuela (Cargoes, FOB lifting port designated)
- San Joaquin, 41.0-41.9, Puerto la Cruz....$3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, La Salina....1.85
- Lagomar, 31-31.9, Cardon....2.55
- Lagunillas Heavy, flat, La Salina....2.07

†Differential per deg. of grav. varies

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.80
- Safaniya, 27.0-27.9, Ras Tanura....1.47
- Iran, 34.0-34.9, Bandar Mashur....1.78
- Iran, 34.0-34.9, Abadan....1.73
- Iraq, 35.0-35.9, Fao....1.72
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.59
- Qatar, 41.0-41.9, Umm Said....1.95
- N. Zone, Burghan, 23.5-24.4, Mina Saud....1.48
- N. Zone, Ratawi, 23.5-24.4, Mina Saud....1.41
- N. Zone, Eocene, 16.5-17.4, Mina Saud....1.28

Middle East, Eastern Mediterranean
- Arabia, 34.0-34.9, Sidon....$2.17
- Iraq, 36.0-36.9, Tripoli, Banias....2.21

North Africa, Phillipeville, Algeria
- Hassi Messaoud, 48 and above....Withdrawn

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean..(USMC+15%) $3.28†
U.S. Gulf-New York, dirty...(USMC—5%) $2.71†
NWI-USNH, dirty.....(USMC—25%) $2.06†
NWI-UK/Cont., dirty.....(Scale—35%) 21/3*†
Persian Gulf-UK/Cont., dirty (Scale—30%) 40/6*†
Persian Gulf-USNH, dirty.....(USMC—55%) $5.72

**Sterling*

Southeast LPG Line Details Outlined

The four companies planning a propane pipeline from Houston to the Southeast are confident of a market, despite construction now under way of another, bigger line into the area.

The companies are Phillips Petroleum Co., Warren Petroleum Corp., Tuloma Gas Products Co., and Union Texas Natural Gas Corp. (PW—Dec. 9'60,p41).

Each company has completed its own preliminary engineering study on the feasibility of building the line and final studies are in progress, it is reported.

The group and Trans-Southern Pipeline Corp., which has started its line, propose to charge the same tariff—11.1¢ per bbl. per 100 mi. (PW—Sep.30'60,p11).

Trans-Southern is a subsidiary of Transcontinental Gas Pipe Line Corp.

Transco says that market studies show that propane demand in the Southeastern states they intend to open to shippers is between 60,000 b/d and 100,000 b/d, which it considers "very good."

The four companies are similarly optimistic. A spokesman says that if such a pipeline is good business for a common-carrier, it would also be a "good deal" for the shippers themselves.

If they build the line, the oil companies haven't decided yet whether it will be for private use strictly or a common-carrier.

As planned now, the latest proposed line will be built from Mont Belvieu, just west of Houston, to Raleigh, N. C., at a cost of $35-million.

It will cross Louisiana, Mississippi, Alabama, Georgia, and South Carolina.

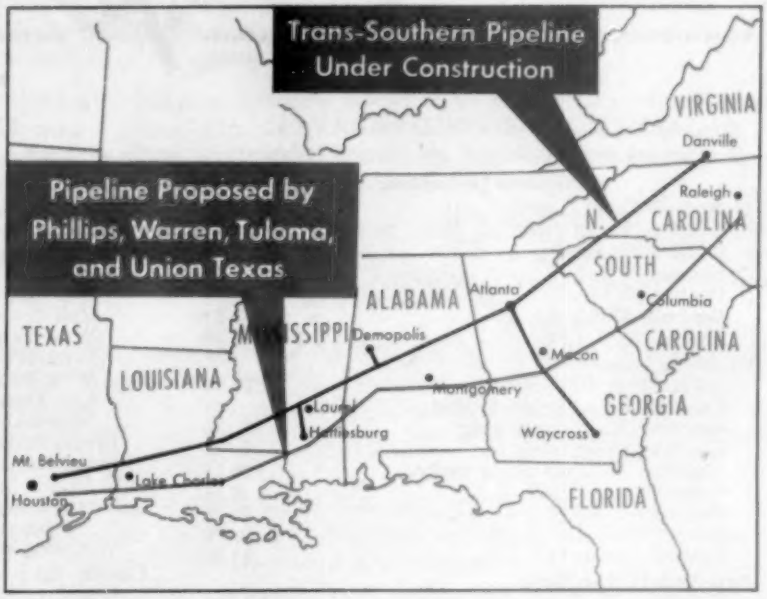
Last week, it had not been disclosed exactly where it was planned to terminate the line.

Two of the prospective participants, Union Texas and Warren, have underground storage facilities for LPG at Mont Belvieu.

Under present plans, the 1,100-mi. line will be 8 in. as far as Macon, Ga., and 6 in. the rest of the way.

Initial throughput of the line would be 25,000 b/d—11,000 b/d more than the total quantity now being sold in the area by three of the companies.

Warren sells 7,000 b/d of propane; Phillips, 5,000 b/d; and Union Texas, 2,000 b/d.



The three companies, plus Tuloma Gas, say they have sufficient supplies of propane to ship an additional 11,000 b/d into the Southeast.

The amount of propane moved through the line will be increased if the market grows. One source says that ultimate shipments through the line are expected to reach between 40,000 b/d and 50,000 b/d.

Trans-Southern expects to complete its 60,000 b/d line nine months to one year ahead of the group, and thereby, presumably tie up key markets.

The company says it has already made one river crossing and has acquired a "substantial" part of the right-of-way it needs. Shippers' commitments are sufficient to warrant proceeding with construction, it adds.

The $63-million natural gas liquids line is the first ever to be planned for the Southeast, which now gets its LPG chiefly by truck and rail.

Trans-Southern's line, like the joint-company line, will be telescoped, but of a larger diameter throughout its length. It reportedly will be 12 in. to an undisclosed point, and then 18 in. to its terminus.

The four firms intend to serve an area extending 150 mi. on each side of their line, while Trans-Southern plans to reach all points in the states its line traverses, plus Florida and Tennessee.

Actually, this 300-mi.-wide belt will comprise the greater portion of the six states that the line would cross. Markets in the swath would be reached by trucks from six terminals at undisclosed points along the line and from one at Raleigh.

The terminals would have surge tanks and loading docks.

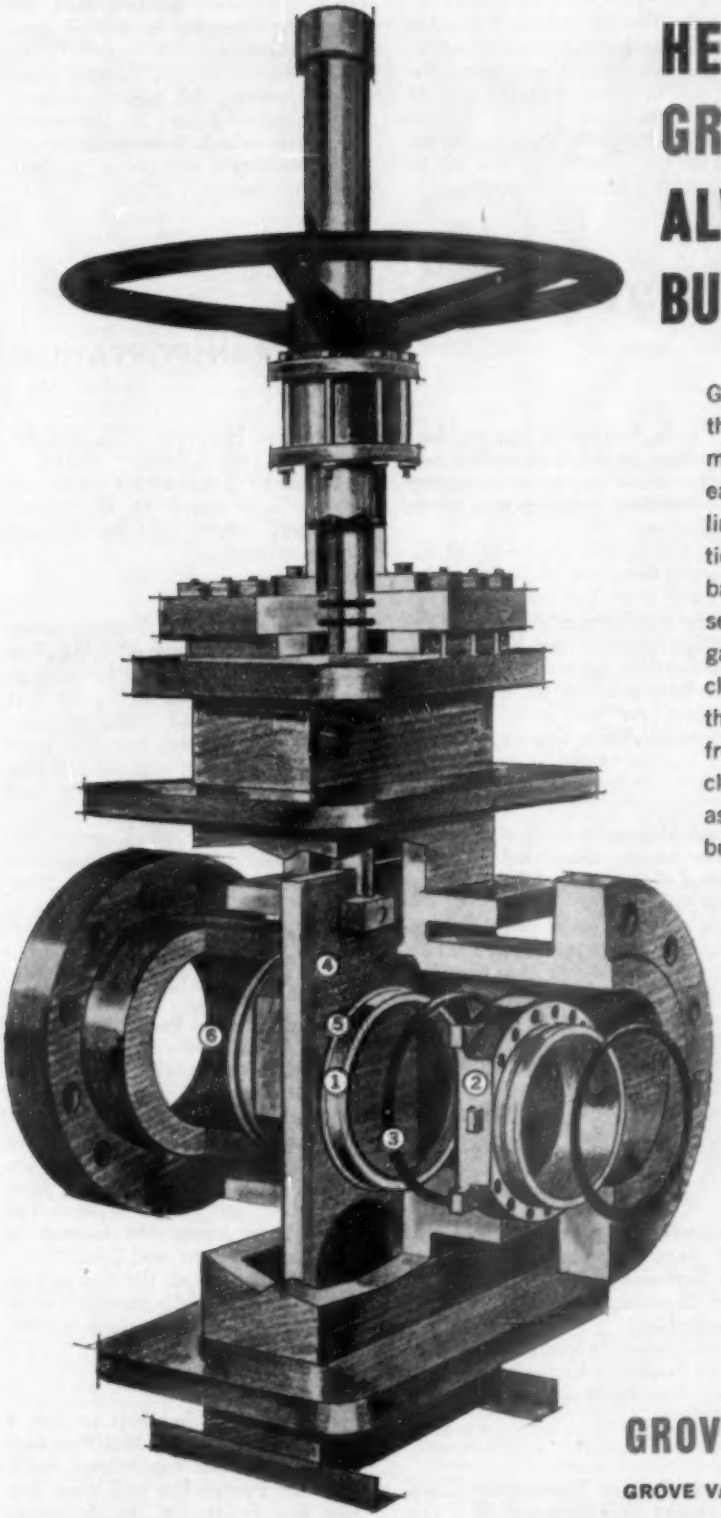
In addition to delivering enough LPG to supply its markets in the same six states in their entirety, Trans-Southern will extend its line into Virgina and build a 215-mi. spur from Macon to Waycross, Ga., near Florida, to enable it to serve that latter state. Trans-Southern also plans to provide an outlet for its shippers to Tennessee.

Trans-Southern will accept LPG for shipment at points on its line near Mont Belvieu, Beaumont, Lake Charles, Eunice, and Baton Rouge.

Routes of the two lines run near each other in an east-northeasterly direction, the route of Trans-Southern's line following the natural gas line of Transco, from Eunice, La., to Danville.

As a result of the fact that Trans-Southern is building the line alongside the gas pipeline, it expects to be able to cut installation and operating costs.

First, right-of-way acquisition costs have been relatively small. Second,



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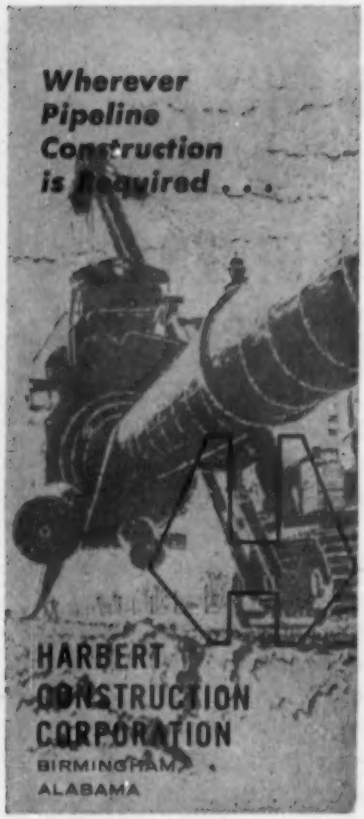

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construction of the line will be performed by Trans-Southern and Transco jointly, thereby making it possible to utilize the parent company's know-how and personnel. Third, pump stations will be situated at the sites of existing compressor stations, as will nine of the ten terminals to be erected along the line. Fourth, the line will be operated by Transco employees.

Carl M. Loeb, Rhoades & Co., N. Y. investment bankers, may arrange the financing for the oil companies' pipeline.

Gulf Interstate Co., Houston pipeline consultants, has made a preliminary engineering study for the investment firm, which is financial advisor to Union Texas, one of the prospective participants.

What's New / IN TRANSPORTATION

Rio Rojo Gathering System, Inc., is scheduled to put in operation next week its natural gas gathering system in southwestern Arkansas and northern Louisiana.

The system will consist of 40 mi. of lines of diameters of 2½ in., 4 in., 6 in., and 8 in. The company is also building a compressor station and dehydration plant in the Kiblah field, Miller County, Arkansas.

Rio Rojo plans to use its facilities to deliver 7-million cf/d of gas to Arkansas Louisiana Gas Co.

•

Truck shipments have started out of the nearly completed products terminal of Continental Oil Co., near Great Falls., Mont.

The storage and truck-loading depot receives products through a 6-in. pipeline of Yellowstone Pipe Line Co., which connects at Helena with the company's Billings-Spokane line.

Capacity of the terminal, upon completion of all its five storage tanks, will be 290,000 bbl. Three have been erected so far. Products stored include gasoline, No. 1 distillate, No. 2 diesel fuel, and jet fuel.

•

The new gas gathering pipeline of Gulf Resources, Inc., and Natural Gas Gathering Co. in Zapata and Starr Counties, Tex., has been put in operation.

Initial deliveries have begun through the $1.7-million, 40-mi. line to Tennessee Gas Transmission Co.

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Texas Eastern Transmission Corp. has sought FPC approval of a proposed rate settlement providing for refunds of $27,419,575 on two conditional rate increases.

TET began collecting the first rate increase on Nov. 10, 1957, and the second on Dec. 1, 1959.

It told FPC that 99.4% of its customers have agreed to the refund settlement, which calls for payment of 6% interest.

•

The Military Sea Transportation Service is seeking offers of U.S.-flag T-2 or jumboized tankers for time or consecutive voyages during the first nine months of 1961 or the full year.

While MSTS says that bids must be in by Tuesday and remain firm until Dec. 30, it is reserving the right to consider late offers.

The vessels are being sought for dirty service in the Caribbean; U.S. Gulf Coast, East Coast, and West Coast waters; and also for trading to Alaska and Newfoundland.

•

Construction of the 2,200-mi. pipeline of Mid-America Pipe Line Co. is virtually complete, with LPG now being delivered to all seven distribution terminals (PW—Sep.16'60,p10).

The last three terminals were put in operation this month. They are situated at Pinebend, Minn.; Iowa City, Iowa; and Janesville, Wis. The other four depots are located in Nebraska, Missouri, and Iowa.

Initial capacity of the line will be 50,000 b/d, which is expected to be increased ultimately to over 85,000.

•

FPC will open hearings on Jan. 4 on the plan of United Gas Pipe Line Co. to build gas transmission facilities from Bastian Bay and West Bastian Bay Fields, La., to its system near Lirette, La.

The $16.9-million project would enable United to move 330-million cf/d of gas from the fields.

REMICK McDOWELL will become chairman and chief executive officer of Peoples Gas Light & Coke Co., Chicago, when **Eskil I. Bjork** retires from both positions next March. McDowell is now president and a director of Peoples Gas. **Leslie A Brandt,** currently comptroller and vice-president of the company, will succeed McDowell as president. After his retirement, Bjork will continue as a director of the company. He has also been elected chairman of the executive committee. He will relinquish the chairmanship of the boards of several subsidiaries, but will continue as a member of those boards. **Ward C. McCallister,** now an assistant comptroller for Peoples Gas, will succeed Brandt as comptroller and will also become a vice-president. **Wilfred G. Pilgrim** will continue as assistant comptroller, and will also become assistant vice-president. **Elmer F. Schuldt,** now chief operating engineer, will succeed **John J. Novy** as assistant vice-president, operating division, when Novy retires in February.

W. J. Bowen

R. McDowell

W. J. BOWEN has been elected president of Houston Corp., St. Petersburg, Fla. Bowen, who has been senior vice-president and a director of the company since 1958, will continue to serve as president and a director of Coastal Transmission Corp. and Houston Texas Gas & Oil Corp., both Houston subsidiaries. **J. French Robinson** has been elected chairman of Houston's executive committee, and **Leon M. Payne** secretary and chief counsel. Robinson is the former chairman of Consolidated Natural Gas Co., New York, and Payne has been serving as a director of Houston and its subsidiaries.

EDWARD L. STEINIGER, president of Sinclair Oil Corp., New York, has been elected a director of Richfield Oil Corp., Los Angeles. He replaces **P. W. Thirtle,** a director of Sinclair, who has retired from the Richfield board.

WILLIAM R. STOTT, vice-president and a director of Standard Oil Co. (N.J.), was decorated with the Cross of Knight of the Order of Leopold by the Belgian Minister of Energy, **R. de Looze.** The award was bestowed on Stott by Belgium's **King Baudouin.** The presentation took place in the offices of Esso Belgium, S.A., in Antwerp.

W. H. Morris

C. J. Allen

WILLIAM H. MORRIS, president of Sinclair Oil & Gas Co., Tulsa, and **C. J. ALLEN,** president of Sinclair Refining Co., New York, have been elected directors of Sinclair Oil Corp., New York, the parent company. Morris, who joined the Sinclair organization in 1933, became associated with Sinclair Refining in 1936 when pipelines became a separate department of that company. He was named vice-president of Sinclair Pipe Line Co. when it was organized in 1951. Before joining Sinclair Oil & Gas as president in 1957, he was president of the pipeline company. Allen was an administrative vice-president of the parent company before his recent election as president of Sinclair Refining.

BERNARD G. HAVDAHL has been appointed assistant director of the New Mexico Petroleum Industries Committee, with offices in Albuquerque. He was formerly administrative assistant for the New Mexico Real Estate Commission.

W. K. BARNES has joined Gulf Oil Corp.'s public relations staff in Houston. He has been in Shell Oil Co.'s public relations department there.

E. Cotton

K. S. Manning

ERNEST COTTON has been appointed departmental coordinator for Gulf Oil Corp.'s manufacturing department, and **K. S. MANNING** has been appointed coordinator, product supply, for the department. Cotton will be responsible for manufacturing plans and economic analyses of departmental activities, and will serve in a liaison capacity with other Gulf departments to effect coordination of such plans. Manning will be in charge of the development of the domestic product supply program and the coordination of the worldwide product supply program. He will also serve in a liaison capacity with other departments on product supply matters. **M. L. Ralston** will be the director, departmental planning and economics, under Cotton's supervision. He will be responsible for the development of specific manufacturing plans, for economic evaluations, and for developing performance control standards. **J. N. McGarvey** has been appointed director, domestic product supply, and **C. H. Goldstom** director, foreign product supply, under the supervision of Manning. The five men, whose positions are newly created, will be located in Pittsburgh. Cotton has been director of economics and planning for the manufacturing department since 1956, and Manning was named director of supply and scheduling in the department in 1959. Ralston has been supervisor of product supply since June, and McGarvey has been assistant manager of products supply since 1955. Goldstom was most recently director of foreign product supply.

A. H. McHARG moves up to manager of the organization department of The California Co., New Orleans, and **J. Van Wilson, Jr.,** is the company's new manager of contracts and titles. McHarg was formerly senior staff analyst in the organization department, and Wilson was the company's southwestern Louisiana division landman. McHarg succeeds **Everett K. Hoffman,** who is transferring to Denver as manager of organization and cost control for California Oil Co., Western Division, which is now being formed. Wilson replaces **Morris A. Betts,** who is also moving to Denver to become manager, land and legal, for California Oil Co., Western Division.

A. H. McHarg

H. E. Ries, Jr.

DR. HERMAN E. RIES, JR., has been appointed senior research associate at the Whiting (Ind.) research laboratories of Standard Oil Co. (Ind.). Ries has been studying the interactions that take place at the surfaces of liquids and solids. He received the Ipatieff Award of the American Chemical Society for contributions in this field. Ries, who has been with Standard of Indiana since 1951, has developed techniques to understand better the fundamental properties and behavior of films only one molecule thick. His results have helped to develop better lubricants, and effective detergent and antitrust compounds for gasoline. He has recently applied his studies of such films to explain the structure of plastics.

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STEPHEN D. BECHTEL, JR., has been elected president of Bechtel Corp., San Francisco, succeeding his father, **S. D. Bechtel**, who continues as chairman. His father was the company's second president, and his grandfather was its first. The new president, who joined the company full-time as field engineer in 1948, became vice-president in charge of pipeline operations in the United States and Canada in 1952. In 1955 he was elected senior vice-president and a director, and in that same year became chairman of Canadian Bechtel, Ltd. Two years later, he was named executive vice-president of the parent company, and has had executive responsibility for international operations, domestic and foreign pipeline work, and financial matters. In 1959 he was named chairman of the company's executive committee.

S. D. Bechtel, Jr.

G. Averill

GAGE AVERILL, formerly with Nalco Chemical Co., has been named director of sales for Houston Chemical Corp., New York. He will be responsible for the sales of all Houston products including tetraethyl and tetramethyl lead additives, which the company will produce in 1961, and ethylene oxide and ethylene glycol. Averill was vice-president in charge of catalyst sales for Nalco.

WILLIAM H. MASON, JOHN J. GRIFFIN, and **EDWIN H. STABERT** have formed a new company in Tulsa, called Thermco, Inc., which will design and fabricate process heat transfer equipment for the petroleum, petrochemical, and atomic industries. Mason will head the new company's sales department, as well as operate William H. Mason Co., a Tulsa sales engineering group he founded in 1949. Griffin, who was formerly with National Airoil Burners Co. and Petro-Chem Development Co., will handle process design details for Thermco. Stabert, who has specialized in structural and piping flexibility design for process equipment since 1948, was most recently senior structural engineer for Petro-Chem.

CORNELIUS VANDERULIS is the new senior vice-president, **Andrew N. White, Jr.**, the new vice-president, sales, and **Edward H. Metz** the new secretary and treasurer, for Hayes-Sammons Chemical Co., Mission, Tex., manufacturer of oilfield and agricultural chemicals. Vanderulis, who was most recently secretary and treasurer, will continue as a director. He joined the company in 1950 as credit manager, and was elected a director and secretary and treasurer in 1953. White, who joined the company in 1953, became general sales manager earlier this year. Metz joined the company in 1959 as controller.

KEN C. TUCKER is the new assistant sales manager of Oakite Products, Inc., New York, manufacturer of chemical compounds for industrial cleaning and metal treating. He has been with Oakite since 1945, and was most recently manager of its food industries division. Tucker, who is responsible to **William A. Baltzell**, vice-president and sales manager, will service national accounts.

G. D. DUKE has been appointed service manager for Johnston Testers, Inc., Houston. He will supervise Johnston Testers service in its 45 operating districts throughout the United States. Duke, who joined the company in 1946, became assistant manager, operations, in Houston in 1958, and a year later became southern division manager.

G. D. Duke

A. Campbell, Jr.

A. CAMPBELL, JR., has been promoted to manager of sales and marketing services for the Thermoid Division of H. K. Porter Co. During his 23 years with the Thermoid Division, Campbell has served in various sales and customer service capacities. In his new position, he will head Thermoid's new sales and marketing services department, at the division's sales office in Trenton, N.J. Automotive and industrial product managers and their staffs will be under his supervision. He is also responsible for customer service personnel and the sales statistics and research department.

FRANK MEYER has been named sales manager for Mountain Iron & Supply Co.'s newly established Oklahoma City district sales office. Meyer, who has been with the company since 1952, was most recently district sales manager at its Tulsa office.

AUSTIN J. PADDOCK has been appointed administrative vice-president, fabrication and manufacture, for United States Steel Corp., Pittsburgh. He will be responsible for the American Bridge division, Consolidated Western Steel division, Universal Atlas Cement division, and United States Steel Homes divi-

sion. Paddock, who joined American Bridge in 1929, became vice-president of manufacturing in 1946, and vice-president, contracting in 1954. He has been president of American Bridge since 1956. **J. Donald Rollins** succeeds him as president of that division. Rollins, who joined American Bridge in 1955, was most recently vice-president of facility planning and appropriations.

WARREN RHOADES moves up to design engineer for special projects in the development division of engineering for Cooper-Bessemer Corp., Mt. Vernon, Ohio. Rhoades has been field sales representative for Cooper-Bessemer's southwest marketing district, at Dallas, and a service engineer in the Mt. Vernon service department.

EUGENE F. EMMONS, with the Union Chain Division of Hewitt-Robins, Inc., Stamford, Conn., has been elected to the company's board of directors. He is president of the Union Chain Division, which was Union Chain & Mfg. Co. before it became a part of Hewitt-Robins this year. He had been president of Union Chain & Mfg.

P. C. Mayfield

W. L. Hughes

W. L. HUGHES is the new manager of the Oklahoma City division of Halliburton Co., succeeding **P. C. MAYFIELD,** who returns to his former position of manager of the Midland (Tex.) division to succeed Hughes. Hughes, who has been with the company since 1938, served in West Texas under Mayfield, and then, in 1955, took charge of the Lubbock division. When Mayfield moved to Oklahoma City in 1957, Hughes replaced him in Midland. Mayfield joined Halliburton in 1936, and the following year was transferred to West Texas, where he served in various capacities for the next 15 years. He became division manager in Midland in 1950.

HANS R. WOLFE has joined Ethyl Corp.'s research laboratories in Detroit as a chemical engineer in the refinery technology division. He was associated with Lago Oil & Transport Co. in the Netherlands from 1947 to 1959, and after that with Creole Petroleum Corp. in Venezuela. **Charles P. Talbott** has also joined the Detroit laboratories as technical analyst writer in the information services group. He has had experience both as an engineer and as a technical writer.

HUGH D. O'ROURKE has been appointed manager of the newly organized gas cleaning department of Graver Water Conditioning Co., a division of Union Tank Car Co., with offices in New York. The new department was created as a part of Graver's program of expansion in the field of fluid purification. O'Rourke will be responsible for sales of Graver's line of industrial gas cleaning equipment. Before he joined Graver, O'Rourke was sales manager for another manufacturer of gas cleaning equipment.

WILLIAM T. CUSHING, JR., is the new assistant manager of the London office of National Supply Co.'s export division. Cushing, who joined the company in 1940, was appointed division engineer for the Northwest and Canadian divisions, with headquarters in Casper, Wyo., in 1947, and later became division sales manager there. Three years later, he became manager of drilling equipment sales. He has been manager of industrial sales since 1956.

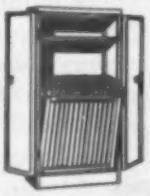
W. T. Cushing, Jr. S. B. Schoelman

S. B. SCHOELMAN is sales manager of Frank Wheatley Pump & Valve Mfg. de Mexico, Mexico City, newly established manufacturing outlet for Frank Wheatley Pump & Valve Mfg., Tulsa. Schoelman has been representative for Petroleos Mexicanos, Mexican state oil agency, in New York and Washington, D.C., for the past 17 years.

A. M. BIRNIE, vice-president of BJ Service, Inc., a subsidiary of Borg-Warner Corp., has moved his offices and staff from Ft. Worth to Arlington, Tex., where new general sales offices and a technical lab have been opened. The new location will serve as headquarters for the company's domestic and export sales, sales training, and credit operations. Equipment and staff of the BJ Service laboratory, under the direction of **V. C. White,** have been moved to the new location from Breckenridge, Tex. BJ Service has headquarters in Los Angeles.

JOHN C. ALRICH has been appointed assistant director of industrial systems for Consolidated Systems Corp., an associated company of Allis-Chalmers Mfg. Co., Bell & Howell Co., and Consolidated Electrodynamics Corp. Aldrich joined Consolidated Systems in 1958 as manager of industrial systems, and was promoted to executive engineer earlier this year. He has also served with Bendix Aviation Corp., and the ElectroData division of Burroughs Corp.

J. V. CRUES has been promoted to location manager at McCamey, Tex., for Schlumberger Well Surveying Corp., Houston, and **D. M. Quillin** has been promoted to assistant to the company's Mid-Continent area manager. Crues was formerly senior sales engineer, and Quillin was division engineer, in the Permian Basin division. Crues succeeds **R. S. Beaty,** who has been transferred to Tyler, Tex. as location manager. **C. F. Grice,** formerly Tyler location manager, moves to Houston headquarters as operations engineer. **F. G. Williams,** field engineer-special services in Liberal, Kan., becomes sales engineer there. **E. S. Scholl,** formerly engineer in the Oklahoma division, has been shifted to the Mid-Continent area in the same capacity, and **H. D. Babcock** has moved from Kansas to the Permian Basin division. He is an engineer.

MAP  FILE

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SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT — BUSINESS EQUIPMENT — USED OR RESALE

OPPORTUNITIES

Manager, Design Engineering

Large midwestern natural gas company will employ a graduate, professional engineer for this position. He must have at least 10-15 years' experience in compressor, process and pipeline design. 3-5 years' fully responsible supervision of such work is required.

This is an excellent opportunity for rewarding work and personal development. Stock purchase, pension and other employee benefit plans are excellent. Age limit 45. Send your complete, detailed resume, including salary requirements.

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Oil Field Tools and Equipment Sales Representation for American manufacturers, offered for Italy and North Africa especially, by Italian Engineer, retiring from large Company. Highest References Italy and U. S. P-5755, Petroleum Week.

DON'T FORGET THE BOX NUMBER

Let's See Ourselves As Others See Us

MANY INDUSTRIES have been successful in creating favorable images to increase sales by taking the initiative to show the public how their products make life easier for Mr. & Mrs. Consumer.

If the petroleum industry would take the time to look at itself through the eyes of the public, possibly valuable lessons could be learned. There are many areas where the industry's image could be improved considerably. To name a few:

1 The industry's most important product has an offensive odor. It is frequently spilled on fenders and chrome, leaving stains and fumes that irritate the customers. Why, with the industry's knowledge of blending and dyes, can't an additive be developed to neutralize the unpleasant odor? And particularly, why can't station attendants fill motorists' tanks without slopping a few cents' worth on cars or on the station driveway?

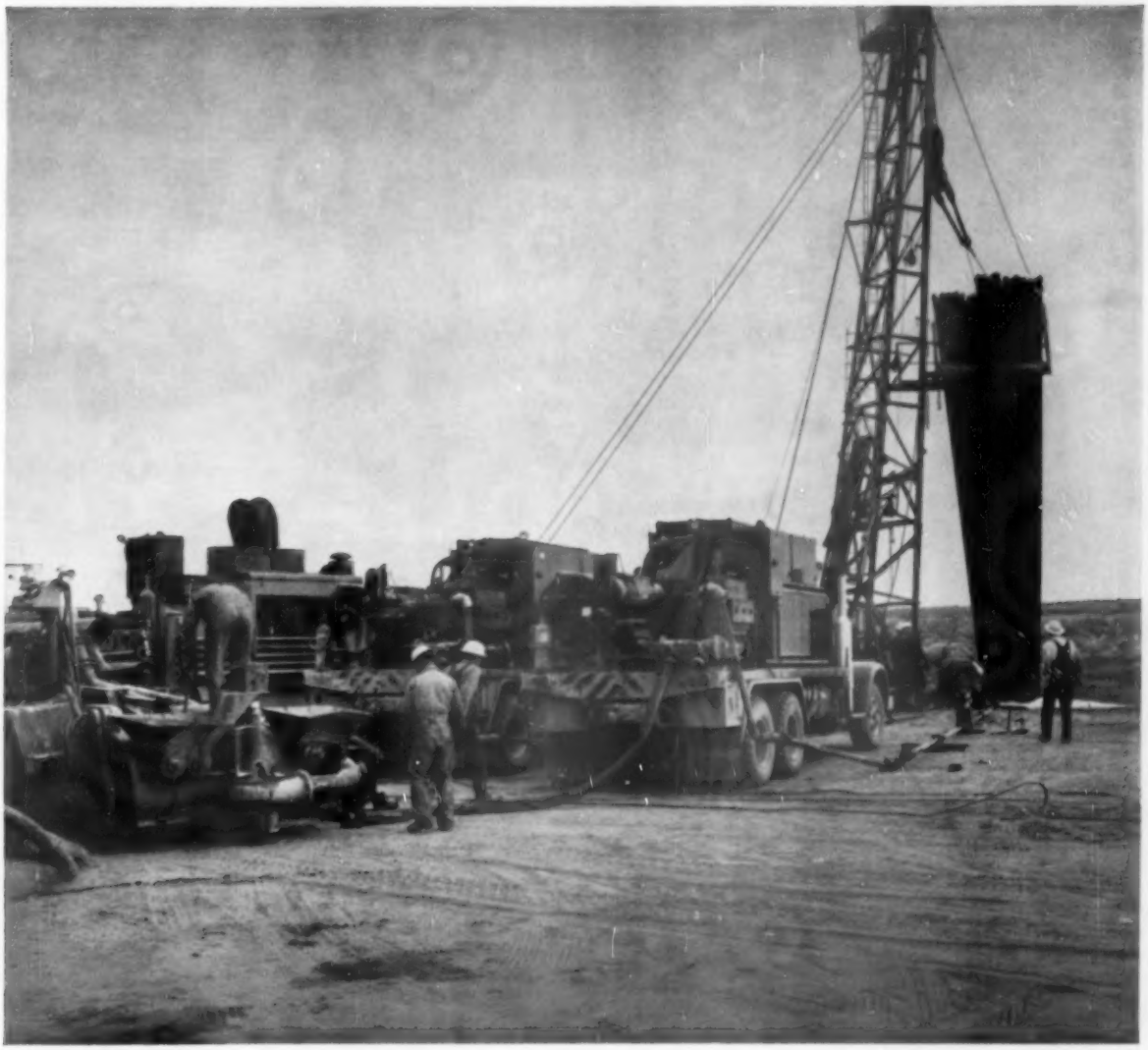
2 The basic advertising theme of many marketers emphasizes the power or the "medicinal" qualities of their gasolines. Reading between the lines of some promotion copy, gasoline Brand A becomes a treatment rather than a treat. What's wrong with making the sales pitch on the treat—the pleasures the motorists will gain from smooth, dependable driving by using Brand A to get them where they want to go with the least effort?

3 The oil industry cries too much. When the automobile manufacturers announce longer mileage between oil changes, or greaseless bearings, petroleum marketers gather together and shed a river of tears. Why can't the industry seize such opportunities and hail them as examples of progress of petroleum? Longer intervals, between crankcase fills wouldn't be possible if the industry hadn't developed better lubricating oils. Nor would the greaseless bearing be possible. Ford Motor Co.'s molybdenum-disulfide-base grease, which is said to be good for 30,000 mi., is due, in part, to a product developed by the oil industry.

ALL OF THESE SHORTCOMINGS in public acceptance of the industry come home to roost when major industry issues go before the public. Witness the support the antidepletionist can readily muster among consumers who already harbor gripes about oil companies.

The valid arguments in favor of percentage depletion are hard to sell even to thinking citizens who already have a biased view of the industry. Possibly a more effective approach to create a better image would be for the industry to talk in terms the public can understand: the jobs provided by petroleum; the comforts offered by the many products and byproducts; the progress being made through petroleum research.

Frequently, the best defense is to mount a strong offense.



OPERATORS REPORT UNUSUALLY SUCCESSFUL WORKOVERS USING DOWELL SERVICES

Workover treatments by Dowell are helping many operators make their leases more profitable and increase their overall net profits. Here are just a few of the ways operators are using Dowell services and products: 1) To reduce lifting costs. 2) To hold production near maximum. 3) To retard decline rates. 4) To avoid too-frequent workover jobs. 5) To produce oil that could not be recovered otherwise.

In North Dakota, for example, an operator got a 100 bopd flowing well and a 25-day treatment payout from a triple-purpose Dowell fracturing job.

In Illinois, Dowell helped an operator turn a 2 bopd salvage well into a 16 bopd producer.

In Manitoba, Canada, a high-injection-rate Dowell fracturing treatment changed a 16 bopd pumping well into a 150 bopd flowing well.

In West Texas, an operator used Dowell services to squeeze cement, perforate and fracture an old well, resulting in an increase from 7 bopd to 100 bopd.

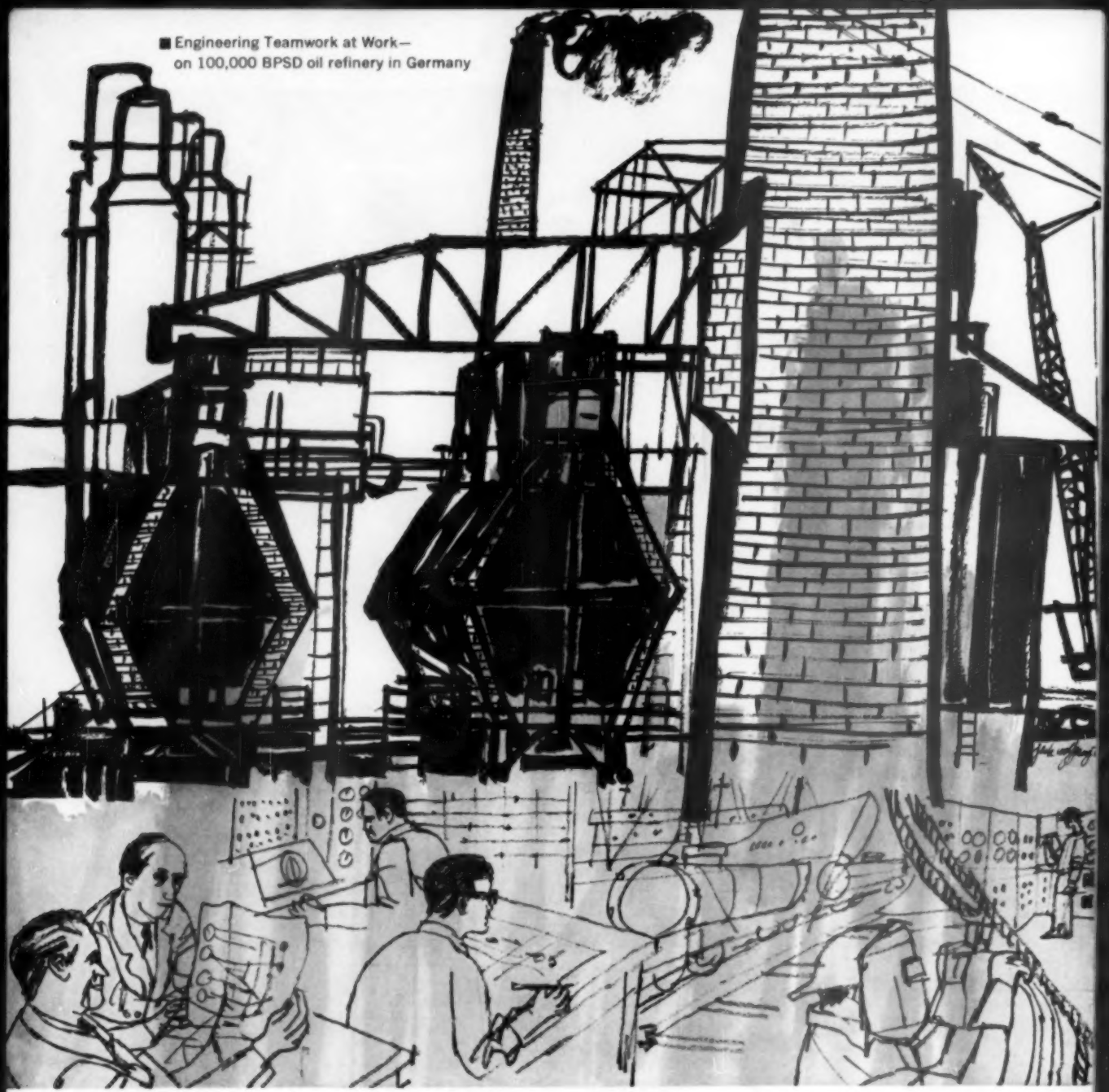
If you have wells that are sick, or just too expensive to operate profitably, *dial Dowell!* Dowell services and products are offered from more than 150 offices and stations in the United States, Canada, Venezuela, Argentina, France, Germany and the Sahara area. Dowell, Tulsa 1, Oklahoma.

Services for the oil industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

■ Engineering Teamwork at Work—
on 100,000 BPSD oil refinery in Germany



NEWEST RHINELAND REFINERY

A major contribution to West Germany's dynamic industrial growth is the giant new grass roots refinery of BP Benzin und Petroleum A.G. at Dinslaken. When fully completed, in 1961, it will increase the Republic's domestic source of gasoline, oil, and other petroleum products by 100,000 BPSD.

A huge and complex undertaking, this new refinery is the result of close coordination of effort among American, British, and German engineers. Each is making important and specific contributions to the over-all project.

Advisory and consultant services are being rendered BP in Germany on many phases of the undertaking by Kellogg Refinery Consultants, Ltd., Dusseldorf. These include procurement of materials and equipment, construction, operator training—as well as advice to BP Benzin und Petroleum A.G. on the testing and start-up of its refinery. Most of the materials and equipment have been supplied by German industry.

Fried. Krupp, Industriebau has worked closely with Kellogg on the project from inception through construction.

If you are planning to build new processing facilities at home or abroad, Kellogg would be glad to show you how its coordinated engineering-procurement-construction services could work to your company's economic advantage. Please address inquiries to The M. W. Kellogg Company, 711 Third Avenue, New York 17, N. Y.

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